

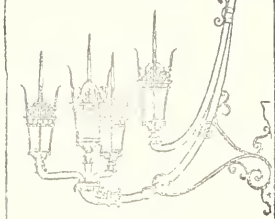
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INDUSTRIAL PROFILE OF MANUFACTURING INDUSTRIES IN MASSACHUSETTS 1970-1977

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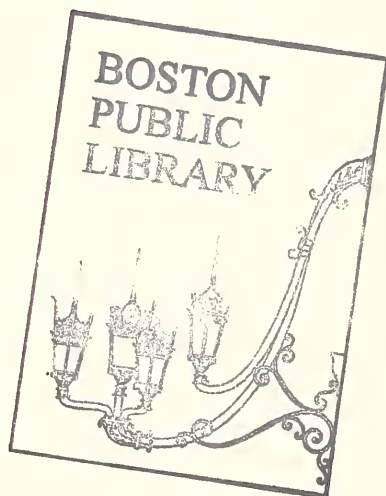


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INDUSTRIAL PROFILE OF MANUFACTURING INDUSTRIES
IN MASSACHUSETTS 1970-1977

COMMONWEALTH OF MASSACHUSETTS



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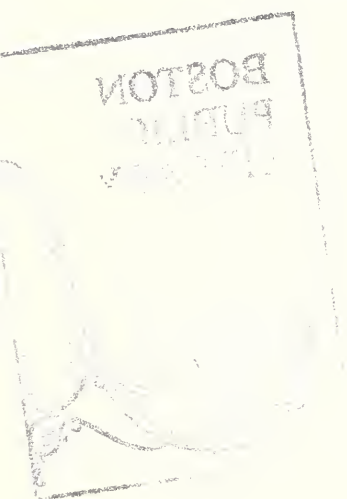


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INTRODUCTION

This publication contains a description of the two digit industrial classification of each major manufacturing group. The industry designations conform to the Standard Industrial Classification, 1972, prepared by the Statistical Policy Division, Executive Office of the President, Office of Management and Budget.

Establishments are classified by type of activity in which engaged. A manufacturing establishment is an economic unit which produces goods and is engaged in one, or predominately one, type of economic activity for which an industry code is applicable. Where a single physical location encompasses two or more distinct and separate economic activities for which industrial classification codes seems applicable, each activity may be treated as a separate establishment.

Average annual employment and total annual payroll 1970-1977, and principal locations in major manufacturing industry groups are derived from the quarterly wage and contribution reports submitted by employers whose establishments are subject to the Massachusetts Employment Security Law. These reports are the most complete records of employment and wage data from any source.

Along with the employment and payroll data for each industry group there are tables classifying manufacturing industries in 1977 by size of employment and size of payroll, and maps highlighting the geographic centers of production.

Table 1

The Commonwealth of Massachusetts
Manufacturing Industries
Classified by Size of Employment
1977

Sic Code*	Industry	Firms#	Employment#
36	Electrical and Electronic Machinery	657	93,800
35	Machinery except Electrical	1,555	83,500
34	Fabricated Metal Products	1,065	51,300
38	Instruments	431	50,500
23	Apparel	741	42,600
27	Printing and Publishing	1,434	41,600
37	Transportation Equipment	153	33,000
30	Rubber and Plastic Products	445	29,700
26	Paper and Allied Products	321	29,600
20	Food and Kindred Products	577	28,800
22	Textile Mill Products	324	27,600
31	Leather and Leather Products	335	22,900
28	Chemicals and Allied Products	355	17,700
33	Primary Metals	246	14,400
32	Stone, Clay, Glass and Concrete Products	309	11,300
25	Furniture and Fixtures	328	8,100
24	Lumber and Wood Products	363	5,200
29	Petroleum Refining and Related Products	38	1,400
21	Tobacco Manufacturers	2	30

* SIC: Standard Industrial Classification, 1972

Employment and Wages Subject to Massachusetts Employment Security Law,
1977 ES-202 Report.

Table 2

The Commonwealth of Massachusetts
Manufacturing Industries
Classified by Size of Payroll
1977

Sic Code*	Industry	Payroll# (in 000's)
36	Electrical and Electronic Machinery	1,261,592.1
35	Machinery except Electrical	1,194,148.1
38	Instruments	751,850.6
34	Fabricated Metal Products	671,198.7
37	Transportation Equipment	537,331.3
27	Printing and Publishing	510,080.2
26	Paper and Allied Products	391,027.9
30	Rubber and Plastic Products	335,549.3
20	Food and Kindred Products	333,870.0
23	Apparel	331,599.8
22	Textile Mill Products	292,430.2
28	Chemicals and Allied Products	270,514.3
31	Leather and Leather Products	200,262.5
33	Primary Metals	190,372.2
32	Stone, Clay, Glass & Concrete Products	158,861.1
25	Furniture and Fixtures	81,056.9
24	Lumber and Wood Products	47,125.4
29	Petroleum Refining and Related Prods.	24,337.7
21	Tobacco Manufacturers	294.0

* SIC: Standard Industrial Classification, 1972

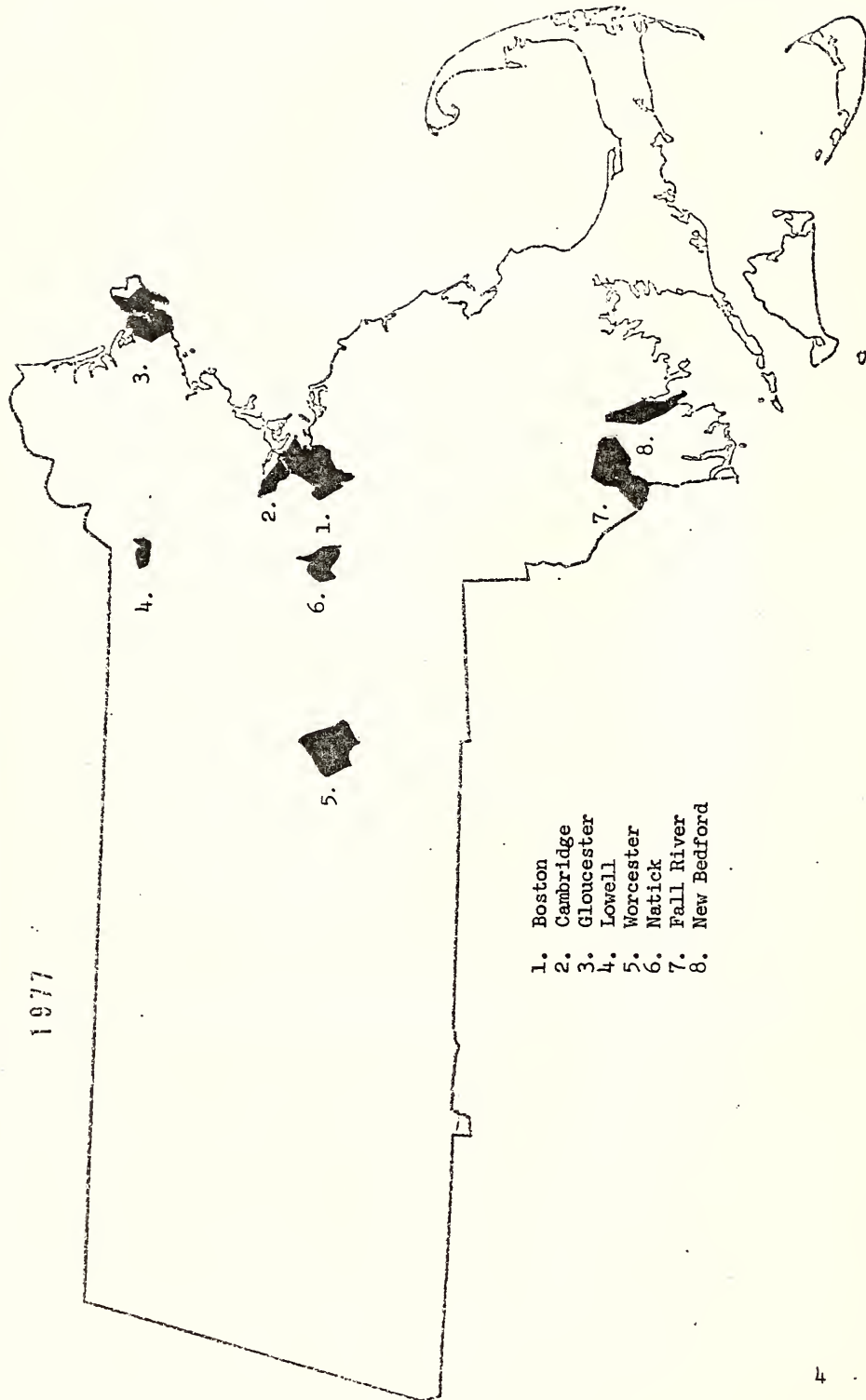
Employment and Wages Subject to Massachusetts Employment Security Law, 1977 ES-202 Report.

THE MANUFACTURING INDUSTRIES

CENTERS OF PRODUCTION

MAJOR GROUP 20 FOOD AND KINDRED PRODUCTS

1977



1. Boston
2. Cambridge
3. Gloucester
4. Lowell
5. Worcester
6. Natick
7. Fall River
8. New Bedford

The Major Group As A Whole

This major group includes establishments manufacturing or processing food and beverages for human consumption and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels

Location	Employment	Percent of Statewide Total
Boston	7,429	25.8
Cambridge	1,527	5.3
Gloucester	1,455	5.1
New Bedford	1,430	5.0
Worcester	1,086	3.8
Natick	1,013	3.5
Lowell	987	3.4
Fall River	874	3.0

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$275,165.9	37,100
1971	283,236.3	35,300
1972	294,915.6	34,700
1973	302,264.5	34,200
1974	303,856.7	31,000
1975	301,846.1	28,500
1976	324,656.6	29,300
1977	333,870.0	28,800

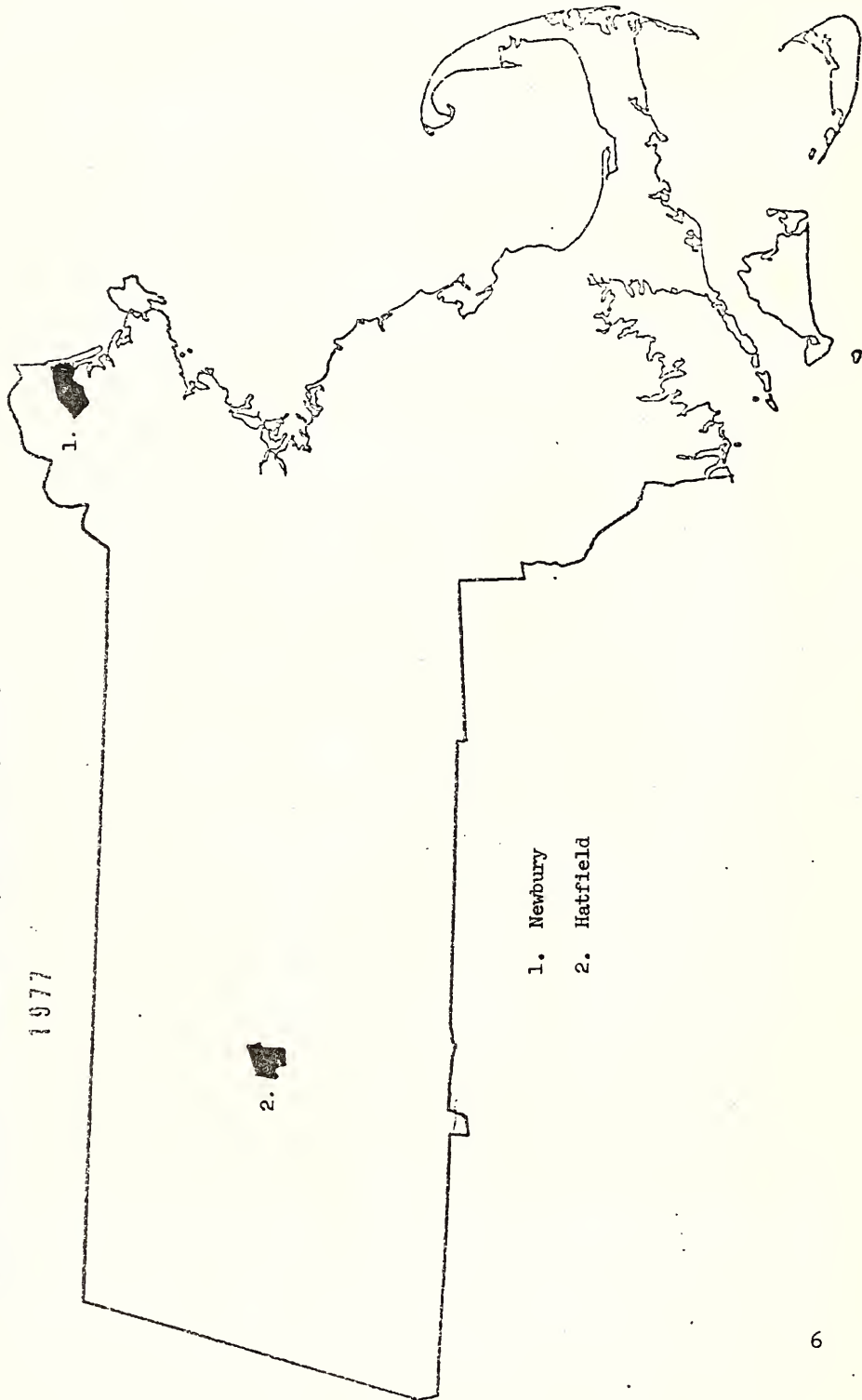
Industry Trends

This industry has been characterized by 21 years of consecutive declines from 1954 to 1975, after reaching its peak in 1953 with 50,500 workers. Twenty-two years later job rolls hit a low of 28,500. Over the past two decades, technological change in the form of automated processes has been considered to be an important nemesis for this sector. The meat processing segment has suffered the greatest loss of workers over this period, due in part to ever spiraling prices in addition to the increased dependence on automation. Since 1975 however, employment appears to have stabilized. Nevertheless this industry can never hope to reach prior levels of vitality.

CENTERS OF PRODUCTION

MAJOR GROUP 21 TOBACCO MANUFACTURES

1977



MAJOR GROUP 21.-TOBACCO MANUFACTURES

The Major Group As A Whole

This major group includes establishments engaged in manufacturing cigarettes, cigars, smoking and chewing tobacco, and snuff, and in stemming and redrying tobacco. The manufacture of insecticides from tobacco byproducts is included in Major Group 28.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Hatfield	18	60.0
Newbury	10	33.3

Average Annual Employment and Annual Payroll Statewide

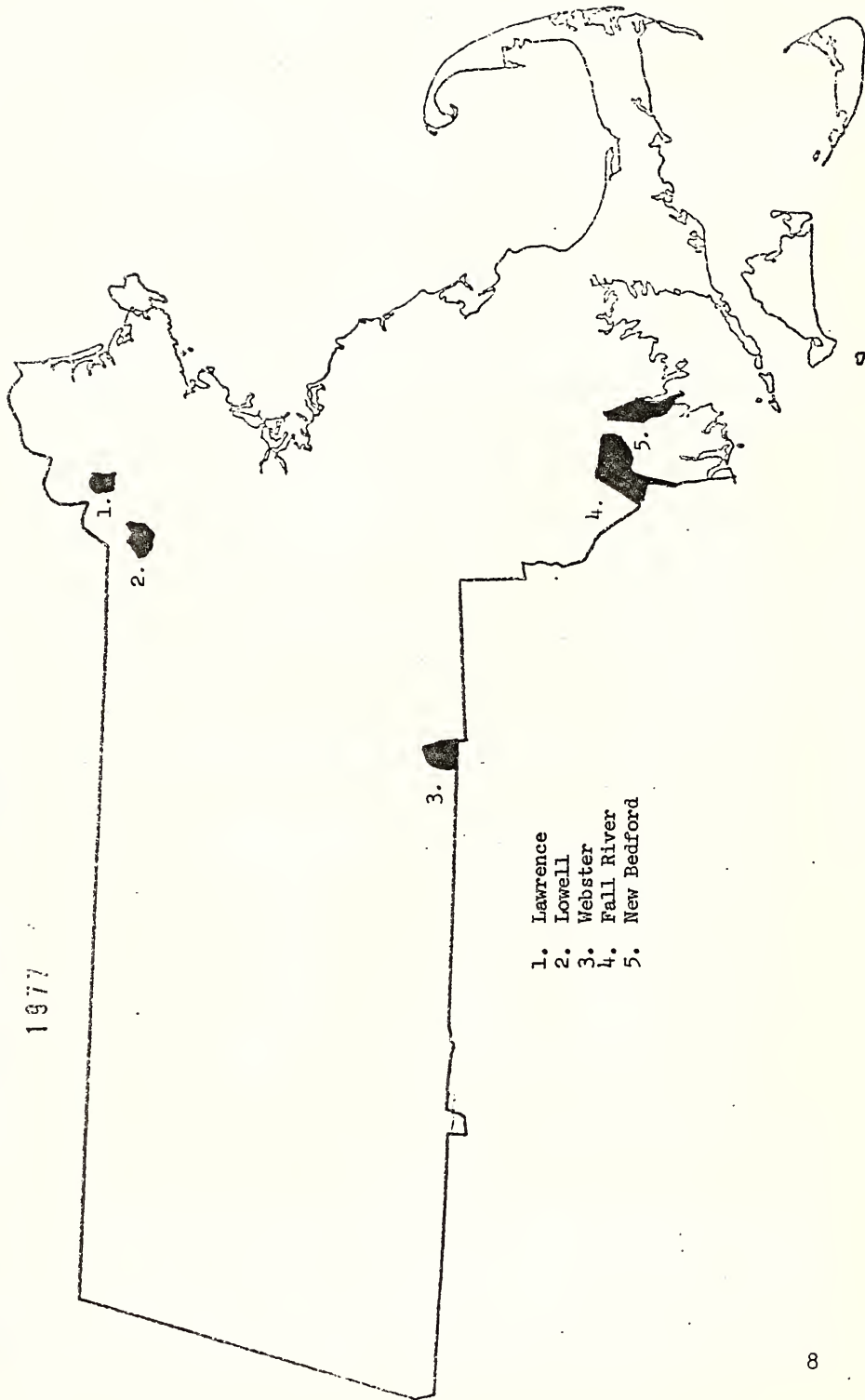
Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$1,142.7	200
1971	1,121.0	200
1972	1,052.3	100
1973	1,024.8	100
1974	896.8	100
1975	926.1	100
1976	862.5	100
1977	294.0	30

Industry Trends

The tobacco industry represents the smallest industry within the entire manufacturing sector. Over the period from 1970 to 1977 employment has declined from 200 to only 30 persons. This trend is not expected to reverse itself in the foreseeable future and the size of the industry itself indicates that even should the industry double or triple its size during the next few years, it will have virtually no impact on the economy of the Commonwealth.

CENTERS OF PRODUCTION
MAJOR GROUP 22 TEXTILE MILL PRODUCTS

1977



MAJOR GROUP 22.-TEXTILE MILL PRODUCTS

The Major Group As A Whole

This major group includes establishments engaged in performing any of the following operations: (1) preparation of fiber and subsequent manufacturing of yarn, thread, braids, twine, and cordage; (2) manufacturing broad woven fabric, narrow woven fabric, knit fabric, and carpets and rugs from yarn; (3) dyeing and finishing fiber, yarn, fabric, and knit apparel; (4) coating, waterproofing, or otherwise treating fabric; (5) the integrated manufacture of knit apparel and other finished articles from yarn; and (6) the manufacture of felt goods, lace goods, nonwoven fabrics, and miscellaneous textiles.

This classification makes no distinction between the two types of organizations which operate in the textile industry: (1) the "integrated" mill which purchases materials, produces textiles and related articles within the establishment, and sells the finished products; and (2) the "contract" or "commission" mill which processes materials owned by others. Converters or other nonmanufacturing establishments which assign materials to contract mills for processing (other than knitting) are classified in nonmanufacturing industries; establishments which assign yarns to outside contractors or commission knitters for the production of knit products are classified in Group 225.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Fall River	3,975	14.4
Lowell	2,601	9.4
Lawrence	2,326	8.4
New Bedford	2,276	8.2
Webster	1,388	5.0

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$213,081.3	31,300
1971	209,217.5	29,200
1972	234,176.3	30,600
1973	254,829.3	31,800
1974	245,603.0	28,800
1975	244,832.2	25,600
1976	278,853.9	27,800
1977	292,430.2	27,700

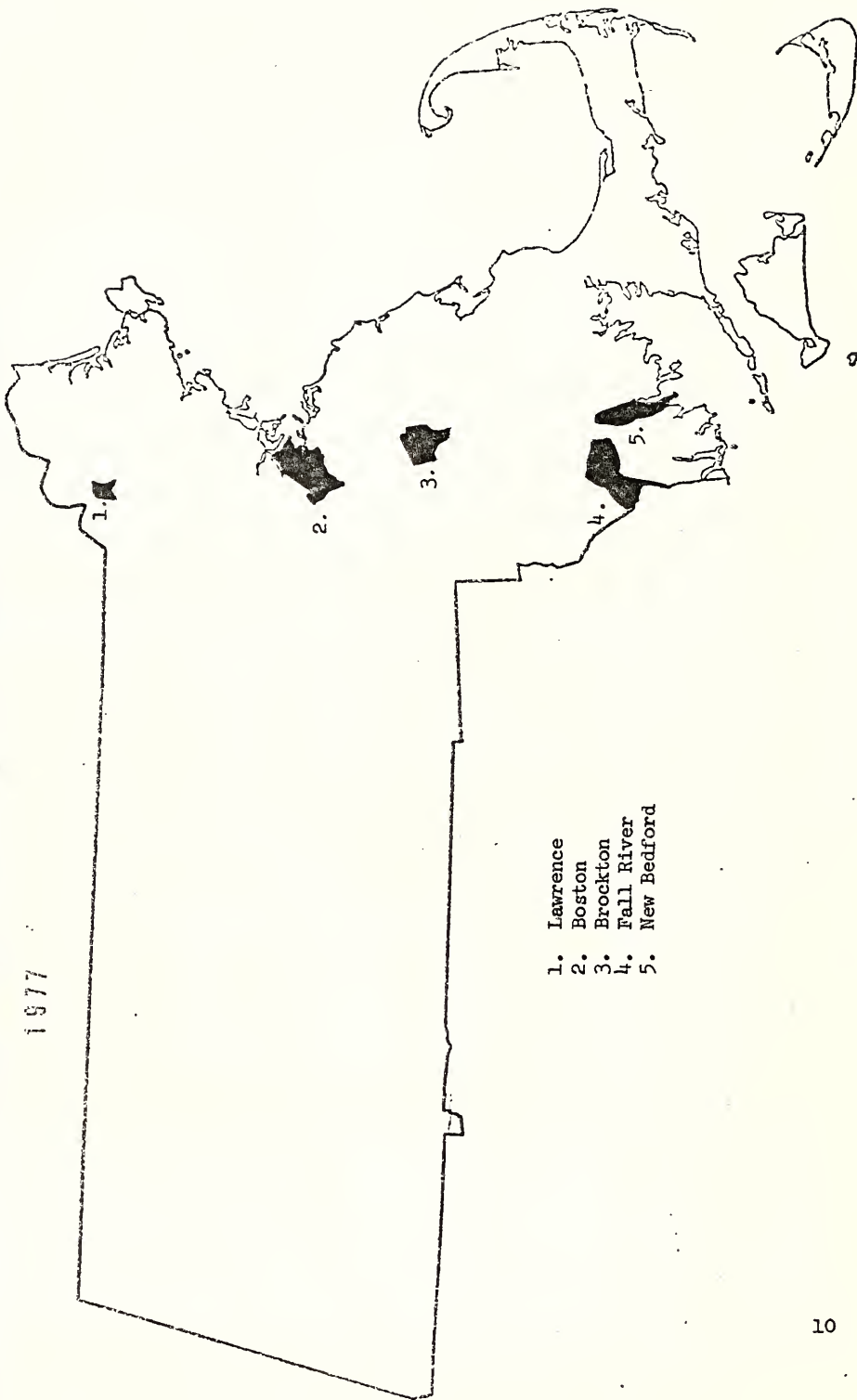
Industry Trends

The textile industry in Massachusetts, long characterized by declines in employment due to plant relocations out of state, business failures, increasing costs and stiff competition from imports, was one of the few industries to jump ahead of the general pace of post recessionary recovery during 1976. This stimulus was primarily based on increasingly fashion conscious consumers as well as a wave of consumer spending which had been postponed during the recession years. In fact during the calendar year of 1976, this industry recorded a growth rate of 7.0 percent which compared very favorably with a national growth rate for the same period of 7.2 percent. However due to the overall declining nature of the industry within the state as well as much of the Northeast, large gains statewide are not on the horizon for the long term.

CENTERS OF PRODUCTION

MAJOR GROUP 23 APPAREL AND OTHER FINISHED PRODUCTS FROM FABRICS

1977



- 1. Lawrence
- 2. Boston
- 3. Brockton
- 4. Fall River
- 5. New Bedford

MAJOR GROUP 23.-APPAREL AND OTHER FINISHED
PRODUCTS MADE FROM FABRICS
AND SIMILAR MATERIALS

The Major Group As A Whole

This major group, known as the cutting-up and needle trades, includes establishments producing clothing and fabricating products by cutting and sewing purchased woven or knit textile fabrics and related materials such as leather, rubberized fabrics, plastics and furs.

Included in the apparel industries are three types of establishments: (1) the "regular" or inside factories, (2) contract factories, and (3) apparel jobbers. The regular factories perform all of the usual manufacturing functions within their own plant; the contract factories manufacture apparel from materials owned by others; and apparel jobbers perform the entrepreneurial functions of a manufacturing company, such as buying raw materials, designing and preparing samples, arranging for the manufacture of the garments from their materials and selling of the finished apparel.

Custom tailors and dressmakers not operating on a factory basis are classified in Industry 5699 establishments which purchase and resell finished garments but do not perform the functions of the apparel jobbers are classified in Group 513.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Fall River	9,512	22.6
Boston	8,930	21.0
New Bedford	8,139	19.1
Lawrence	1,585	3.7
Brockton	1,382	3.2

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$246,187.5	49,400
1971	246,292.7	46,300
1972	262,598.5	46,500
1973	278,101.7	46,400
1974	276,671.3	44,100
1975	277,826.9	41,400
1976	318,427.5	43,500
1977	331,599.8	42,600

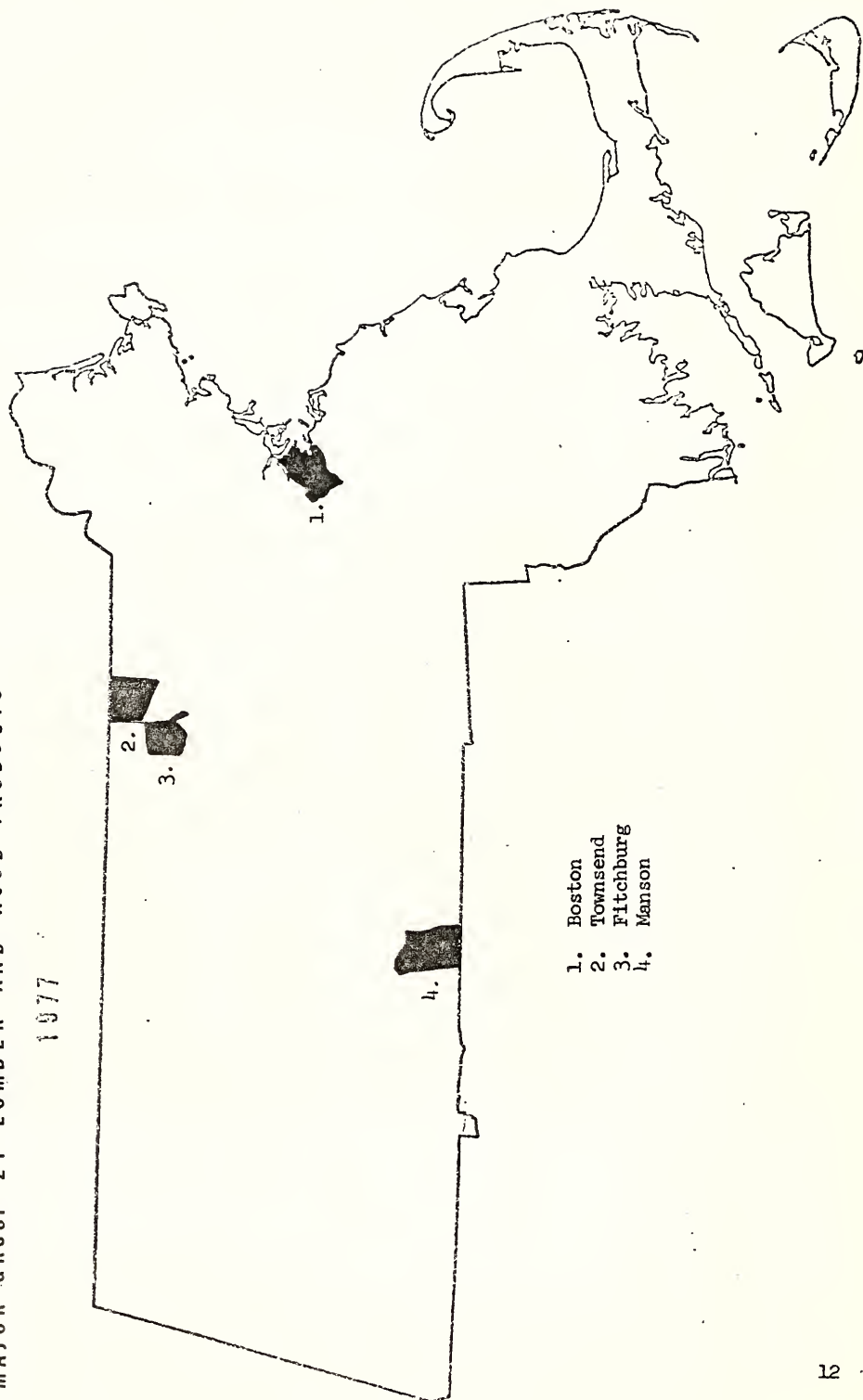
Industry Trends

Over the 10 year period from 1967 to 1977 nearly one quarter of the Commonwealth's apparel jobs were lost as the same economic forces which resulted in a mass exodus of the textile industry from Massachusetts also permeated the apparel industry. However, as with textiles, 1976 saw payrolls swell by 2,700 workers during the first six months. Nevertheless, much of this gain can be attributable to post recessionary revitalization and not to a real longlasting resurgence of the sector. Although this is an industry which remains more labor intensive than most, automation is making some inroads as plants are now beginning to utilize computerized cutting equipment and substituting glueing processes in some area which previously required hand stitching.

CENTERS OF PRODUCTION

MAJOR GROUP 24 LUMBER AND WOOD PRODUCTS

1977



- 1. Boston
- 2. Townsend
- 3. Fitchburg
- 4. Manson

The Major Group As A Whole

This major group includes logging camps engaged in cutting timber and pulpwood; merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood mills and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes. Certain types of establishments producing wood products are classified elsewhere. For example, furniture and office and store fixtures are classified in Major Group 25; musical instruments, toys and playground equipment, and caskets in Major Group 39. Woodworking in connection with construction in the nature of reconditioning and repair, or performed to individual order, is classified in nonmanufacturing industries.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of
		Statewide Total
Boston	471	9.1
Monson	226	4.3
Fitchburg	187	3.6
Townsend	161	3.1

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$31,137.6	4,600
1971	31,580.6	4,500
1972	34,768.4	4,800
1973	40,316.3	5,400
1974	37,334.2	4,500
1975	36,324.4	4,200
1976	42,335.4	4,600
1977	47,125.4	5,200

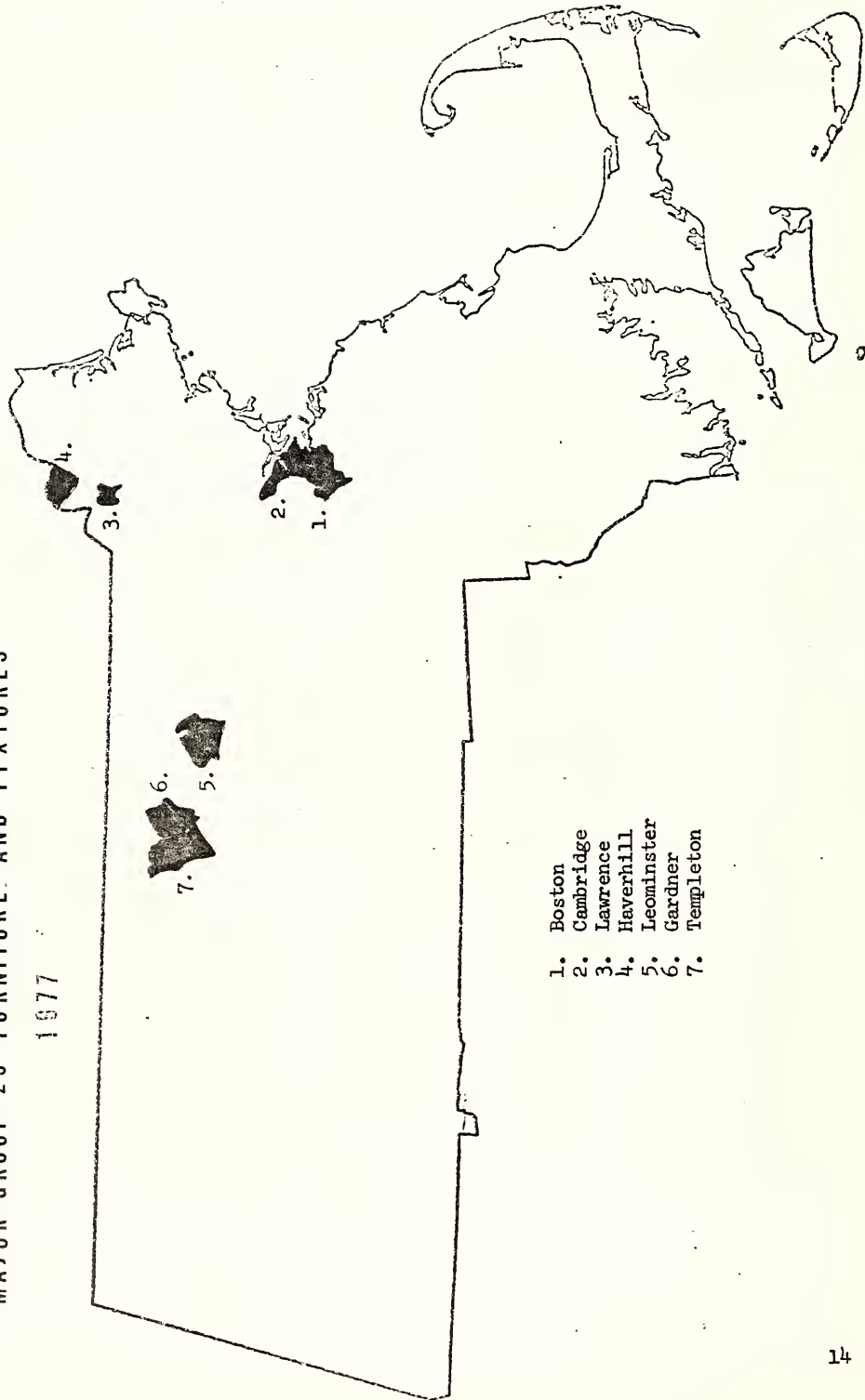
Industry Trends

This industry ranks among the smallest in terms of average annual employment when compared with other manufacturing industries within the Commonwealth. Although small, this industry was affected during the recession as it lost approximately 1,200 jobs from 1973 to 1975. This represents almost one quarter of the entire number employed within the industry, so it was especially hard hit during that two year period. Since 1975, gains of 1,000 have helped to bring the lumber industry back to pre 1974 levels but no appreciable expansion is expected within the near future.

CENTERS OF PRODUCTION

MAJOR GROUP 25 FURNITURE AND FIXTURES

1977



MAJOR GROUP 25.-FURNITURE AND FIXTURES

The Major Group As A Whole

This major group includes establishments engaged in manufacturing household, office, public building, and restaurant furniture; and office and store fixtures. Establishments primarily engaged in the production of millwork are classified in Industry 2431; wood kitchen cabinets in industry 2434; cut stone and concrete furniture in Major Group 32; laboratory and hospital furniture in Major Group 38; beauty and barber shop furniture in Major Group 39; and woodworking to individual order or in the nature of reconditioning and repair in nonmanufacturing industries.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Gardner	1,667	20.6
Boston	832	10.3
Lawrence	411	5.1
Templeton	409	5.0
Haverhill	320	3.9
Cambridge	297	3.7
Leominster	245	3.0

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$ 7,542.7	10,100
1971	68,415.5	9,600
1972	72,039.0	9,700
1973	80,840.2	10,400
1974	83,423.3	10,100
1975	77,451.1	8,400
1976	78,531.6	8,300
1977	81,056.9	8,100

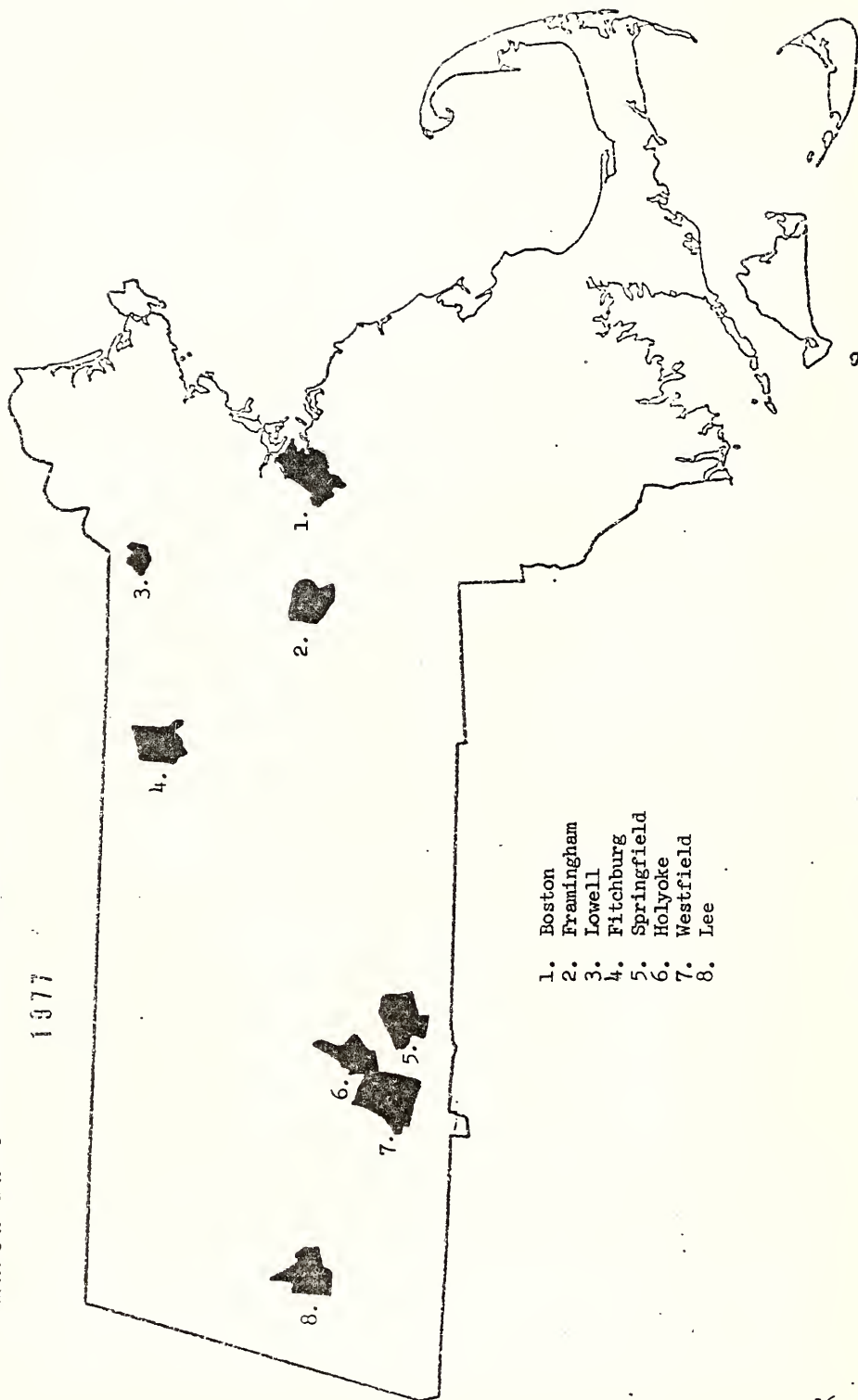
Industry Trends

Furniture and fixtures is not one of the more significant manufacturing sectors. For the past five years, this sector has been steadily declining in size and it stands 2,000 below its 1970 size of 10,100. During the past few years furniture manufacturers have gravitated toward the southern states where operating costs are much more competitive. The future trend for this industry therefore would appear to mirror previous statewide declines.

CENTERS OF PRODUCTION

MAJOR GROUP 26 PAPER AND ALLIED PRODUCTS

1977



The Major Group As A Whole

This major group includes the manufacture of pulps from wood and other cellulose fibers and from rags; the manufacture of paper and paperboard into converted products such as paper coated off the paper machine, paper bags, paper boxes, and envelopes. Certain types of converted paper products are classified elsewhere, such as abrasive paper in Industry 3291, carbon paper in Industry 3955, and photosensitized and blueprint paper in Industry 3861.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Framingham	2,419	8.2
Holyoke	1,771	6.0
Fitchburg	1,299	4.4
Boston	1,222	4.1
Westfield	1,112	3.8
Lowell	1,075	3.6
Springfield	1,044	3.5
Lee	976	3.3

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$278,076.2	34,900
1971	275,426.4	32,900
1972	296,918.5	32,700
1973	324,091.4	33,200
1974	335,300.1	32,300
1975	315,753.0	28,100
1976	364,058.7	29,100
1977	391,027.9	29,600

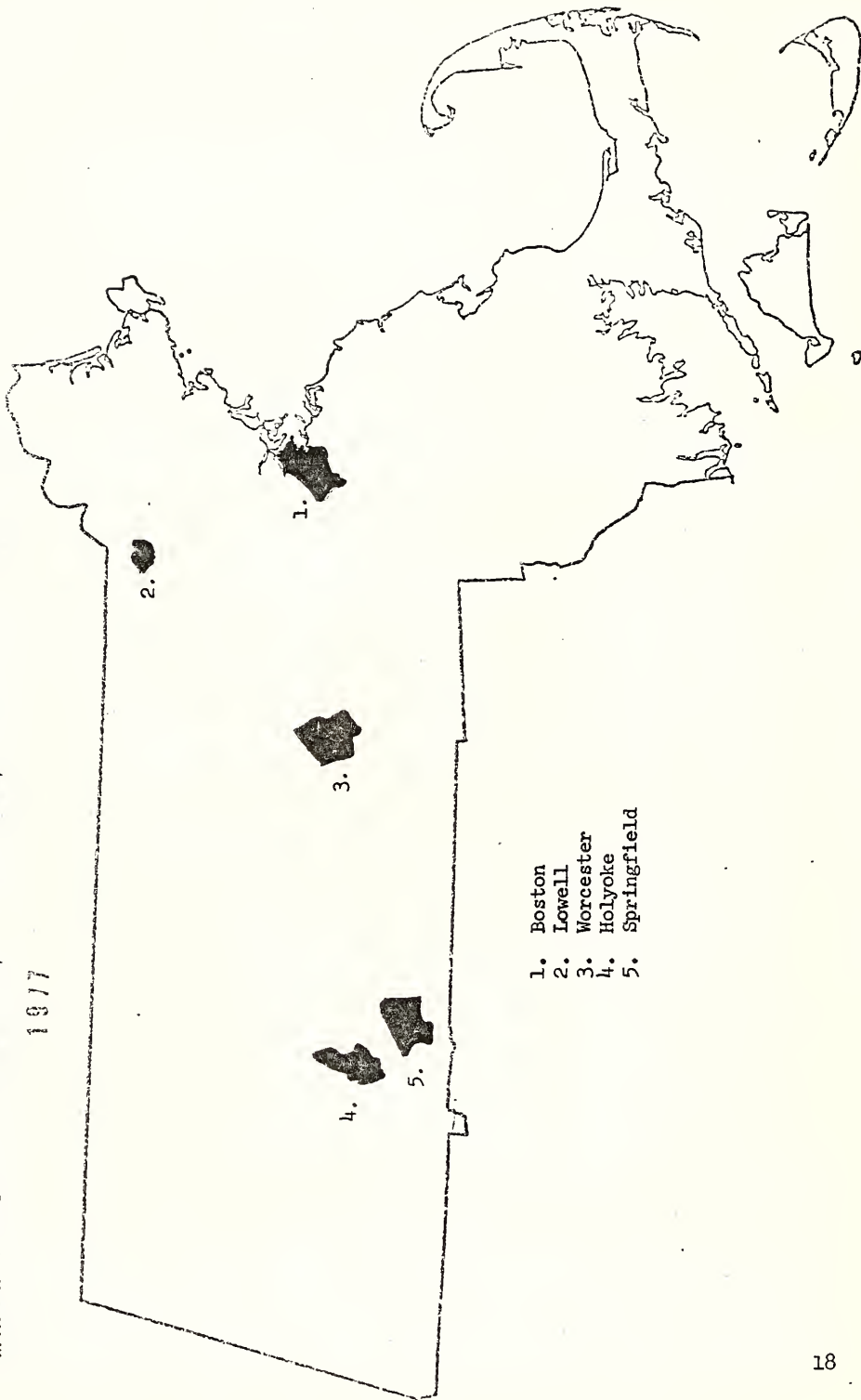
Industry Trends

The paper industry is one of the nondurable goods sectors where employment is divided almost equally between export production and production for local consumption. Although the ninth largest manufacturing employer, employment declined by over 11 percent during the 5 year period from 1972 to 1977. This industry tends to be reflective of changes in the general economy and governmental mandates such as postal hikes.

CENTERS OF PRODUCTION

MAJOR GROUP 27 PRINTING, PUBLISHING, AND ALLIED INDUSTRIES

1977



- 1. Boston
- 2. Lowell
- 3. Worcester
- 4. Holyoke
- 5. Springfield

MAJOR GROUP 27.-PRINTING, PUBLISHING, AND
ALLIED INDUSTRIES

The Major Group As A Whole

This major group includes establishments engaged in printing by one or more of the common processes, such as letterpress, lithography, gravure, or screen; and those establishments which perform services for the printing trade, such as bookbinding, typesetting, engraving, photoengraving, and electrotyping. This major group also includes establishments engaged in publishing newspapers, books, and periodicals, regardless of whether or not they do their own printing. News syndicates are classified in Service Industries, (Industry 7351), and textile printing and finishing in Major Group 22.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Boston	11,701	28.1
Holyoke	2,421	5.8
Worcester	1,649	4.0
Springfield	1,628	3.9
Lowell	1,563	3.8

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$346,605.4	43,700
1971	356,378.2	41,400
1972	385,998.8	42,300
1973	397,401.2	42,000
1974	416,977.7	41,700
1975	436,190.5	40,700
1976	472,009.5	41,100
1977	510,080.2	41,600

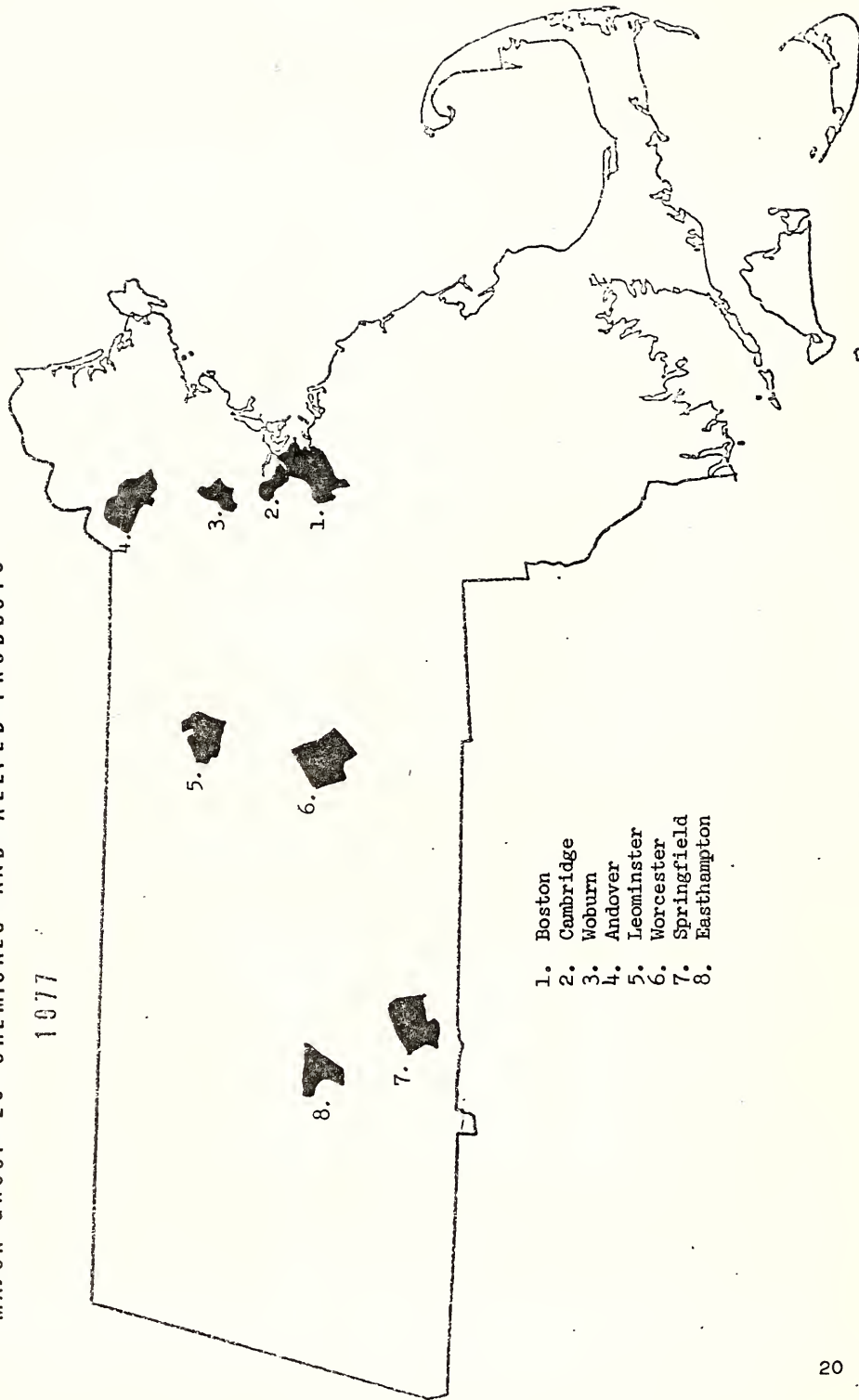
Industry Trends

Both the capital intensive nature of this industry and the ever rising price of paper have resulted in an industry which is struggling to hold its own and in fact has evidenced some contraction since 1970. Necessary investments in automated equipment have resulted in the replacement of many previously manual operations and increased costs since the price of this new technology runs relatively high.

CENTERS OF PRODUCTION

MAJOR GROUP 28 CHEMICALS AND ALLIED PRODUCTS

1977



MAJOR GROUP 28.-CHEMICALS AND ALLIED PRODUCTS

The Major Group As A Whole

This major group includes establishments producing basic chemicals, and establishments manufacturing products by predominantly chemical processes. Establishments classified in this major group manufacture three general classes of products: (1) basic chemicals such as acids, alkalies, salts, and organic chemicals; (2) chemical products to be used in further manufacture such as synthetic fibers, plastics materials, dry colors, and pigments; (3) finished chemical products to be used for ultimate consumption such as drugs, cosmetics, and soaps; or to be used as materials or supplies in other industries such as paints, fertilizers, and explosives. The mining of natural rock salt is classified in mining industries. Establishments primarily engaged in manufacturing nonferrous metals and high percentage ferroalloys are classified in Major Group 33; silicon carbide in Major Group 32; baking powder, or other leavening compounds, and starches in Major Group 20; and artist's colors in Major Group 39. Establishments primarily engaged in packaging, and bottling of purchased chemical products, but not engaged in manufacturing chemicals and allied products, are classified in trade industries.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Springfield	2,463	13.9
Boston	1,604	9.1
Worcester	938	5.3
Andover	742	4.2
Cambridge	695	3.9
Easthampton	637	3.6
Leominster	568	3.2
Woburn	529	3.0

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$182,357.2	19,200
1971	187,742.3	18,600
1972	191,218.0	18,200
1973	211,872.0	18,700
1974	229,032.5	18,800
1975	261,090.4	19,500
1976	261,547.1	18,200
1977	270,514.3	17,700

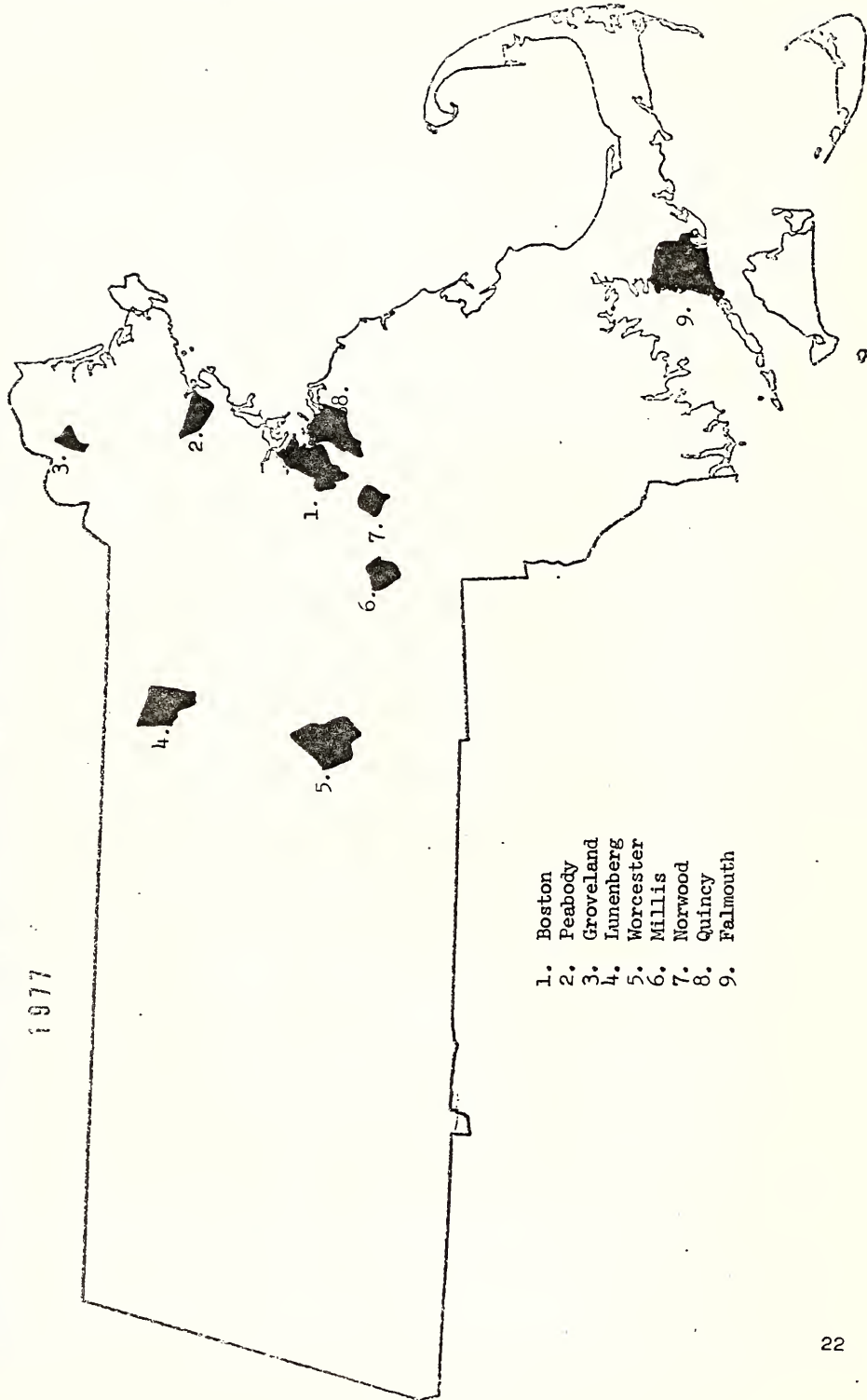
Industry Trends

This industry, traditionally characterized as highly automated, has fluctuated between 18,000 and 20,000 for the past twenty years. While industry employment declined as did both the state and national level, by 4 percent during the recession year of 1975, 1976 saw most of that loss recouped. In fact, over the 5 year period from 1972 to 1977, chemicals and allied products was the only nondurable goods sector to experience any growth at all, albeit only 3.3 percent. Primarily, gains have been reported in firms producing plastic resins, drugs, soaps and cosmetics.

CENTERS OF PRODUCTION

MAJOR GROUP 29 PETROLEUM REFINING AND RELATED INDUSTRIES

1977



1. Boston
2. Peabody
3. Groveland
4. Lunenburg
5. Worcester
6. Millis
7. Norwood
8. Quincy
9. Falmouth

MAJOR GROUP 29.-PETROLEUM REFINING AND RELATED INDUSTRIES

The Major Group As A Whole

This major group includes establishments primarily engaged in petroleum refining, manufacturing paving and roofing materials, and compounding lubricating oils and greases from purchased materials. Establishments manufacturing and distributing gas to consumers are classified in public utilities industries, and those primarily engaged in producing coke and byproducts in Major Group 23.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Norwood	259	18.5
Boston	238	17.0
Lunenburg	124	8.9
Millis	118	8.4
Quincy	100	7.1
Peabody	96	6.9
Worcester	74	5.3
Groveland	68	4.9
Falmouth	45	3.2

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$ 6,898.1	700
1971	7,598.0	700
1972	10,601.5	900
1973	11,459.6	1,000
1974	14,875.7	1,100
1975	16,021.6	1,100
1976	17,978.2	1,200
1977	24,237.7	1,400

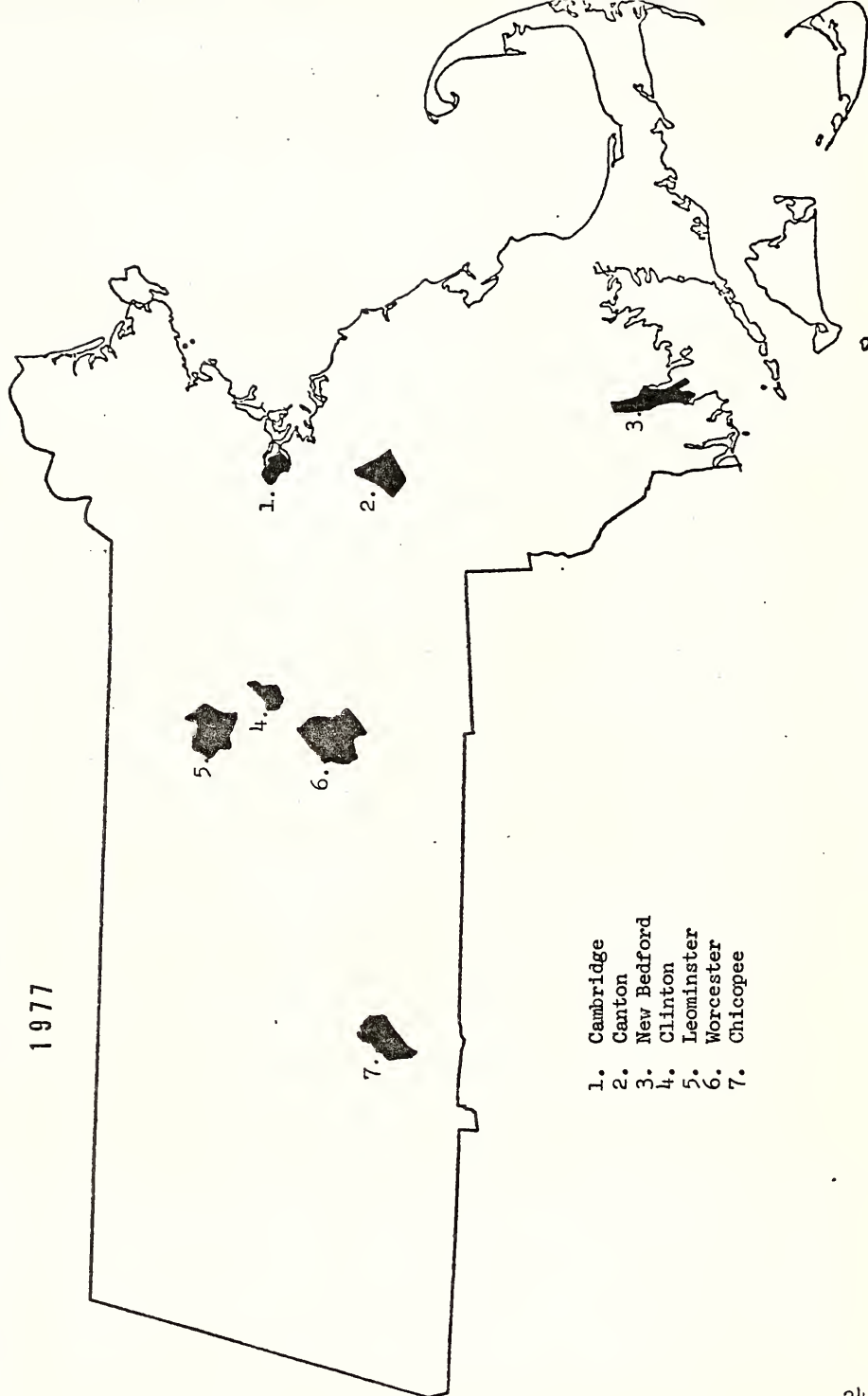
Industry Trends

The component employing sectors of the petroleum industry include petroleum refining, paving and roofing materials and miscellaneous products of petroleum and coal such as lubricating oils and greases. Although small in terms of numbers employed, during the eight year period from 1970 to 1977, employment doubled statewide from 700 to 1,400, while payrolls almost quadrupled over the same period. This industry appears to have been resilient to 1975 recessionary forces as it remained steady during 1975 and started once again to gain during 1976.

CENTERS OF PRODUCTION

MAJOR GROUP 30 RUBBER AND MISCELLANEOUS PLASTIC PRODUCTS

1977



1. Cambridge
2. Canton
3. New Bedford
4. Clinton
5. Leominster
6. Worcester
7. Chicopee

MAJOR GROUP 30.-RUBBER AND MISCELLANEOUS
PLASTICS PRODUCTS

The Major Group As A Whole

This major group includes establishments manufacturing from natural, synthetic, or reclaimed rubber, gutta percha, bolata, or gutta siak, rubber products such as tires, rubber footwear, mechanical rubber goods, heels and soles, flooring, and rubber sundries. This group also includes establishments primarily manufacturing tires, but establishments primarily recapping and retreading automobile tires are classified in Industry 7534. This group also includes establishments engaged in molding primary plastics for the trade, and manufacturing miscellaneous finished plastic products. The manufacture of elastic webbing is classified in Major Group 22; products made of elastic webbing and garments made from rubberized fabrics in Major Group 23; and synthetic rubber in Industry 2822.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Leominster	3,974	13.4
Chicopee	1,971	6.6
New Bedford	1,677	5.6
Clinton	1,479	5.0
Cambridge	1,272	4.3
Canton	1,082	3.6
Worcester	979	3.3

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$241,276.3	33,600
1971	242,372.5	31,600
1972	266,205.4	32,900
1973	298,327.7	35,400
1974	316,885.7	34,300
1975	262,329.4	26,900
1976	306,056.9	29,500
1977	335,493.3	29,700

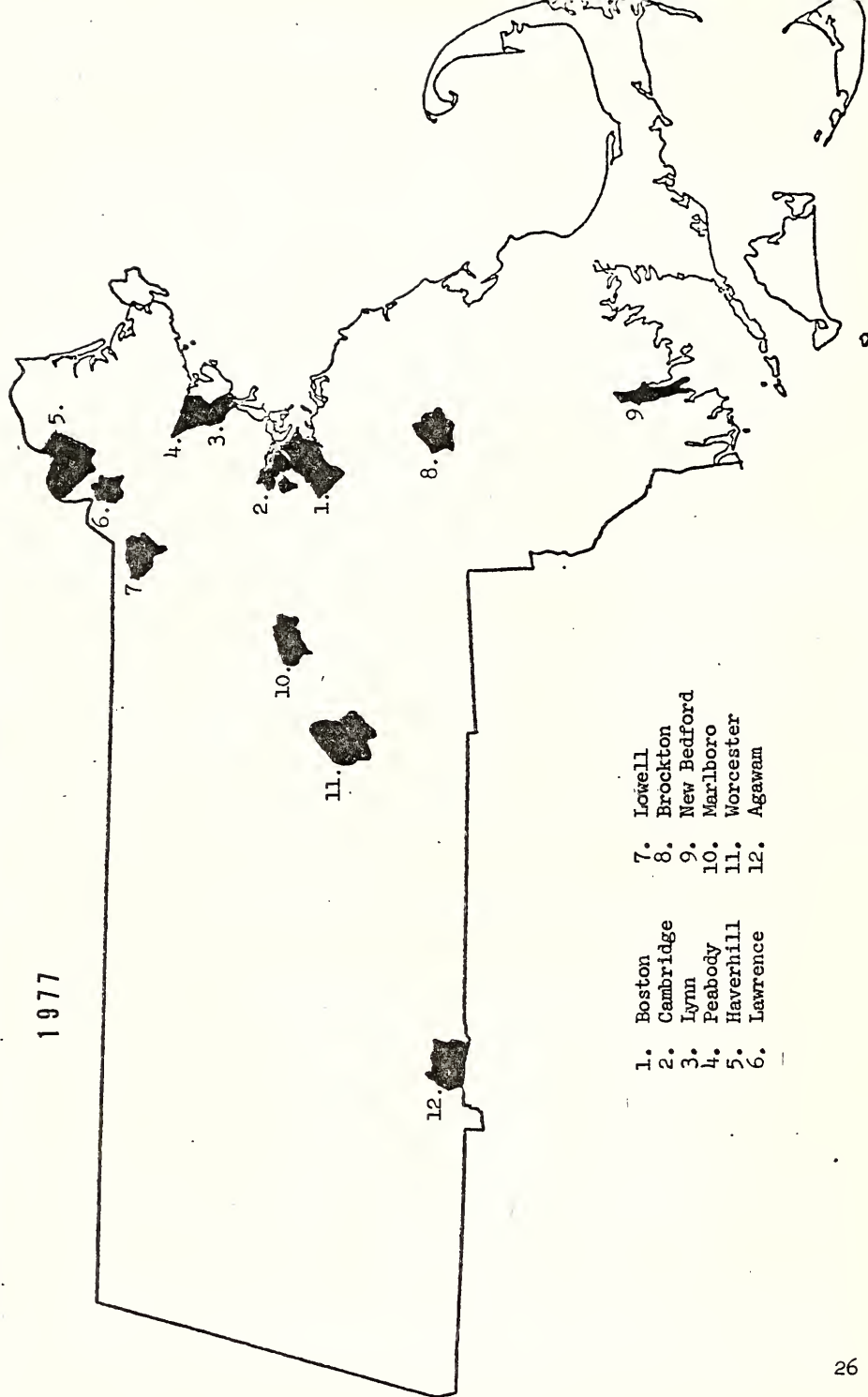
Industry Trends

Employment in this industry for 1977 registered an 11.6 decline from 1970 levels. This industry was especially hard hit during the 1974-75 recession posting a loss of 7,400 jobs during that period. Since 1975 it has regained 3,500 jobs, an increase of 13 percent over the two year period.

CENTERS OF PRODUCTION

MAJOR GROUP 31 LEATHER AND LEATHER PRODUCTS

1977



- | | |
|--------------|----------------|
| 1. Boston | 7. Lowell |
| 2. Cambridge | 8. Brockton |
| 3. Lynn | 9. New Bedford |
| 4. Peabody | 10. Marlboro |
| 5. Haverhill | 11. Worcester |
| 6. Lawrence | 12. Agawam |

The Major Group As A Whole

This major group includes establishments engaged in tanning, currying and finishing hides and skins and establishments manufacturing finished leather and artificial leather products and some similar products made of other materials. Leather converters are also included.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Lawrence	2,386	10.4
Haverhill	1,825	8.0
Boston	1,629	7.1
Brockton	1,562	6.8
Lowell	1,364	6.0
Peabody	1,134	5.0
New Bedford	1,092	4.8
Worcester	988	4.3
Lynn	980	4.3
Agawam	855	3.7
Marlboro	731	3.2
Cambridge	726	3.2

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$213,858.8	36,000
1971	203,621.6	32,200
1972	195,766.9	29,800
1973	189,320.9	27,100
1974	177,637.8	24,100
1975	181,248.5	22,800
1976	202,684.5	24,400
1977	200,262.5	22,900

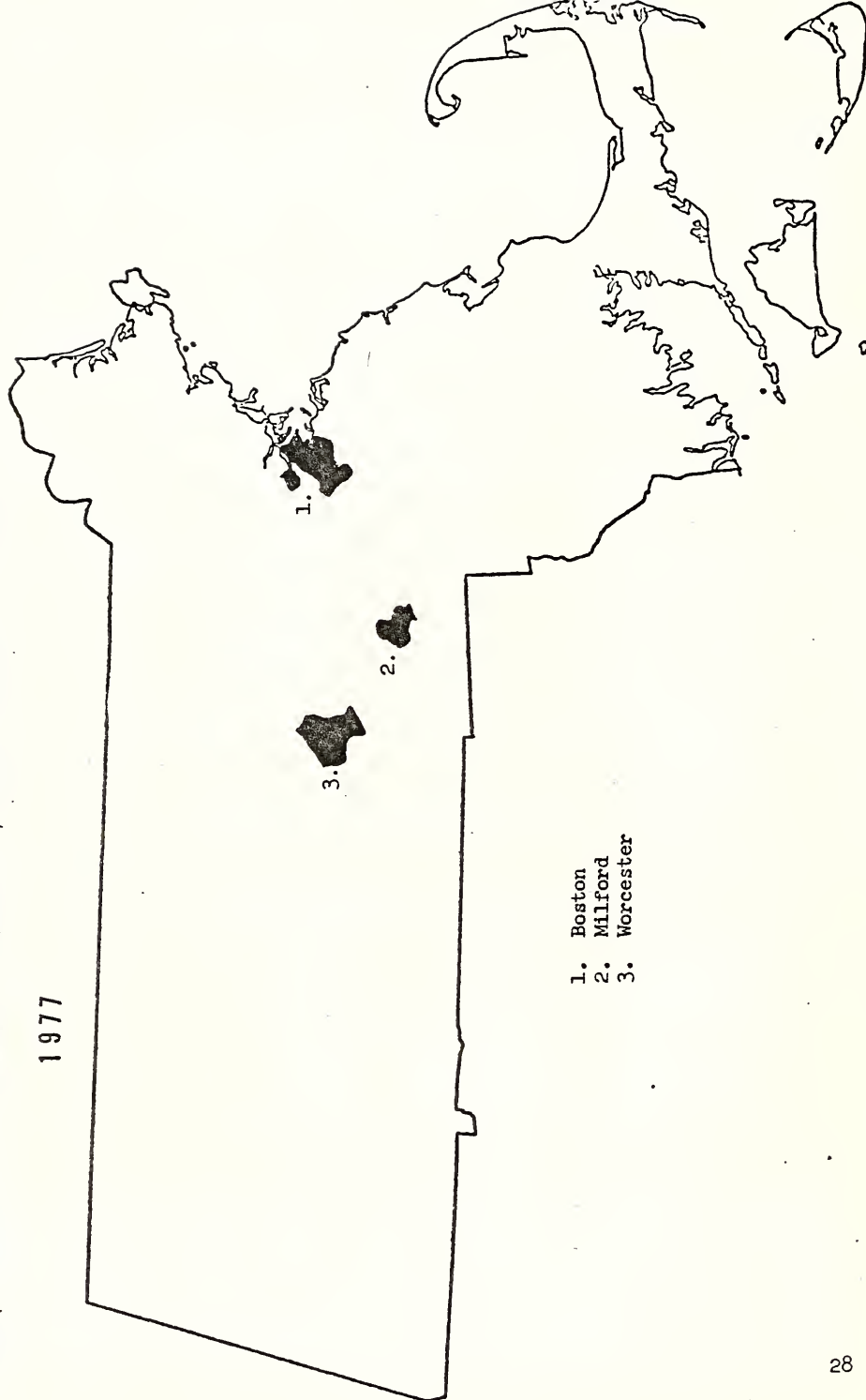
Industry Trends

The leather industry has been in a state of decline in Massachusetts for the past decade. Factors contributing to this decline include, competition from foreign imports, the job losses in the shoe manufacturing sector, substitution of other materials for leather, and changes in consumer preferences. During the 1970-1977 period this industry posted job losses of 13,100 or 36.4 percent. A slight increase occurred in employment levels in 1976, but much of this can be attributed to post recessionary consumer spending, and the historical trend of decline resumed in 1977.

CENTERS OF PRODUCTION

MAJOR GROUP 32 STONE, CLAY, GLASS, AND CONCRETE PRODUCTS

1977



- 1. Boston
- 2. Milford
- 3. Worcester

MAJOR GROUP 32.-STONE, CLAY, GLASS AND
CONCRETE PRODUCTS

The Major Group As A Whole

This major group includes establishments engaged in manufacturing flat glass and other glass products, cement, structural clay products, pottery, concrete and gypsum products, cut stone, abrasive and asbestos products, etc., from materials taken principally from the earth in the form of stone, clay, and sand. When separate reports are available for mines and quarries operated by manufacturing establishments classified in this major group, the mining and quarrying activities are classified in Division B. When separate reports are not available the mining and quarrying activities other than those of Industry 3295 are classified herein with the manufacturing operations.

If separate reports are not available for crushing, grinding, and other preparation activities of Industry 3295 these establishments are classified in Division B.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Worcester	4,230	37.4
Boston	453	4.0
Milford	349	3.1

Average Annual Employment and Annual Payroll
Statement

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$109,289.7	12,000
1971	111,975.8	11,800
1972	114,791.3	11,100
1973	136,953.5	12,600
1974	155,413.0	13,400
1975	133,324.7	10,800
1976	145,014.3	11,200
1977	158,861.1	11,300

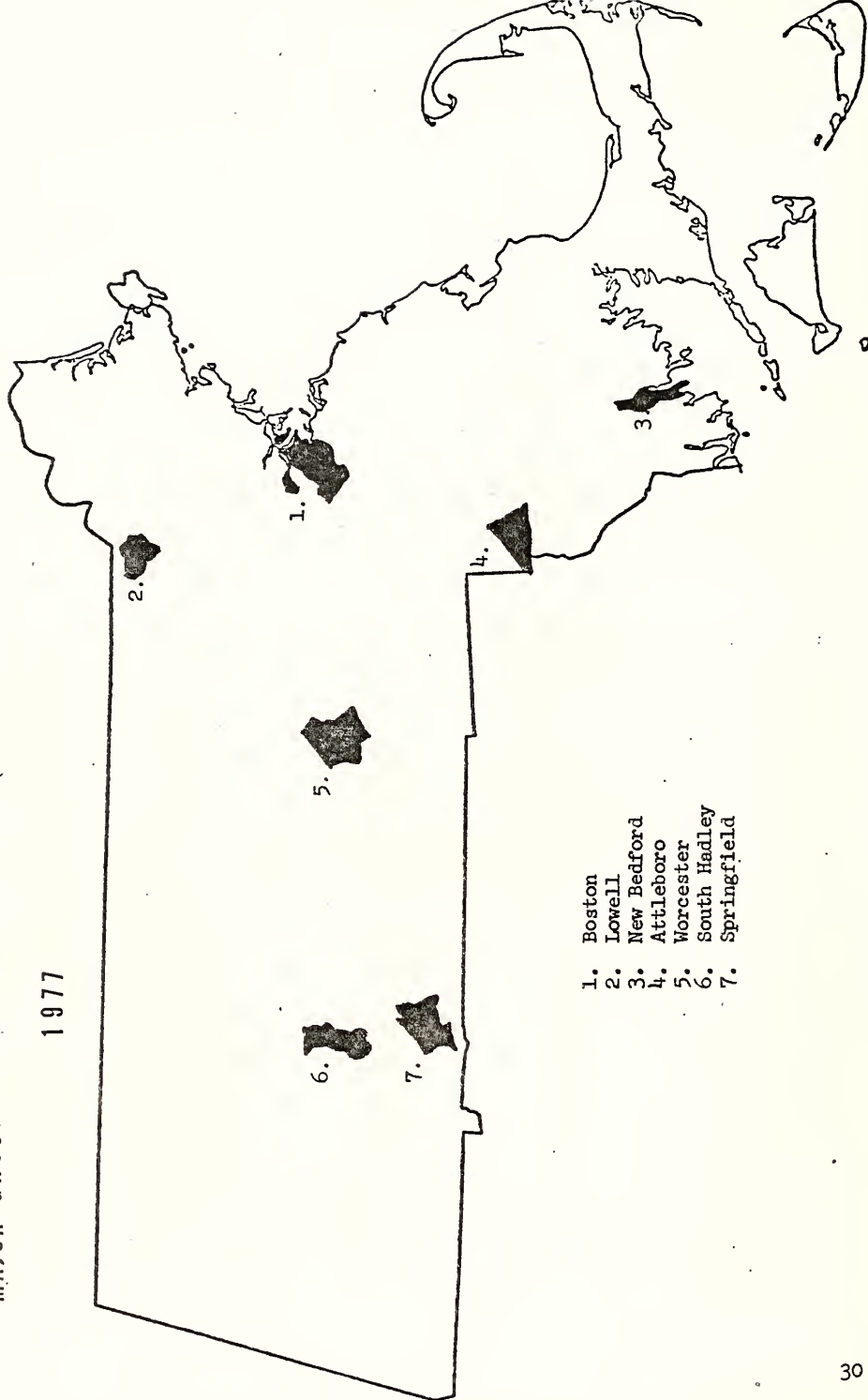
Industry Trends

During the early 1970's this industry posted steady gains, achieving peak employment levels in 1974. However, due to its dependence upon the construction industry as a market it was particularly hard hit during the 1975 recession, losing close to twenty percent of its employment. Since 1975 it has managed to regain 500 of the 2,600 jobs lost during that period and future growth is expected to be only moderate.

CENTERS OF PRODUCTION

MAJOR GROUP 33 PRIMARY METAL INDUSTRIES

1977



MAJOR GROUP 33.-PRIMARY METAL INDUSTRIES

The Major Group As A Whole

This major group includes establishments engaged in the smelting and refining of ferrous and nonferrous metals from ore, pig, or scrap; in the rolling, drawing, and alloying of ferrous and nonferrous metals; and in the manufacture of castings and other basic products of ferrous and nonferrous metals; and in the manufacture of nails, spikes, and insulated wire and cable. This major group also includes the production of coke. Establishments primarily engaged in manufacturing metal forgings or stampings are classified in Group 346.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Worcester	2,075	14.4
New Bedford	1,234	8.6
Attleboro	1,040	7.2
Boston	828	5.7
So. Hadley	556	3.9
Springfield	529	3.7
Lowell	477	3.3

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$166,086.2	19,400
1971	153,449.0	17,200
1972	165,855.7	17,900
1973	177,749.7	17,400
1974	198,472.2	18,000
1975	152,619.0	13,300
1976	164,734.1	13,400
1977	190,372.2	14,400

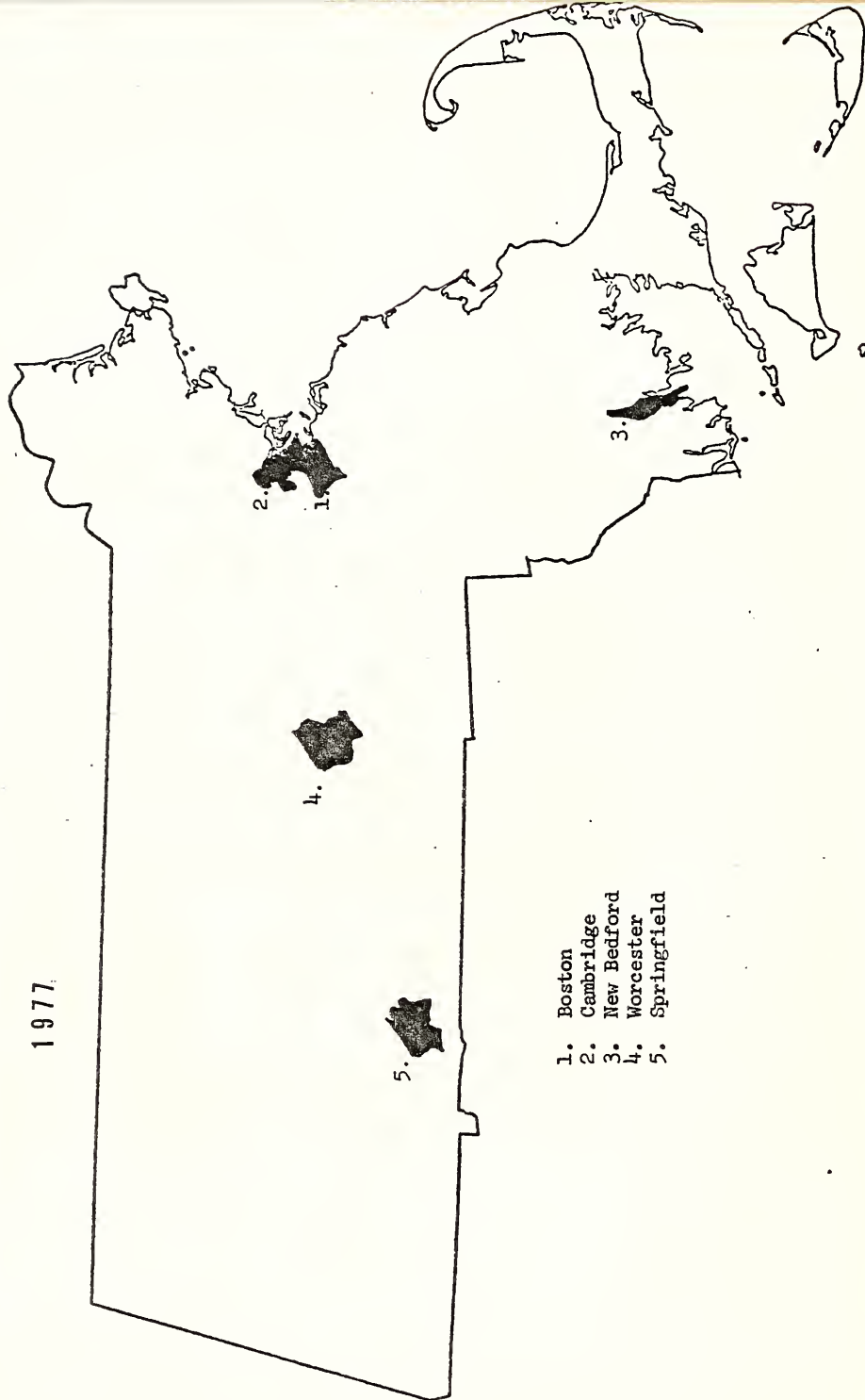
Industry Trends

The primary metals industry has evidenced steadily declining job rolls over the 1970 to 1977 period. An overall decline of 5,000 jobs represents a contraction of over 25 percent. A precipitous drop occurred during the 1974-1975 recessionary period as, in one year, 4,700 or 26.1 percent of total payrolls were lost but since that time some 1,100 jobs within the industry were regained. The nature of products manufactured within this sector are generally of the unfinished type such as forgings, castings, and frames, and as such, inventory accumulations in anticipation of orders is very difficult to gauge. Therefore increased capital investment is not to be anticipated in the near future. Furthermore, the Commonwealth's share of national employment in the primary metal sector is quite small and over half of total employment is involved in exports.

CENTERS OF PRODUCTION

MAJOR GROUP 34 FABRICATED METAL PRODUCTS

1977



MAJOR GROUP 34.-FABRICATED METAL PRODUCTS EXCEPT
MACHINERY AND TRANSPORTATION EQUIPMENT

The Major Group As A Whole

This major group includes establishments engaged in fabrication ferrous and nonferrous metal products such as metal cans, tinware, hand tools, cutlery, general hardware, nonelectric heating apparatus, fabricated structural metal products, metal forgings, metal stampings, ordnance (except vehicles and guided missiles) and a variety of metal and wire products not elsewhere classified. Certain important segments of the metal fabricating industries are classified in other major groups, such as machinery in Major Groups 35 and 36; transportation equipment, including tanks, in Major Group 37; professional scientific and controlling instruments, watches, and clocks in Major Group 38; and jewelry and silverware in Major Group 39. Establishments primarily engaged in producing ferrous and nonferrous metals and their alloys are classified in Major Group 33.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Boston	6,974	13.6
Worcester	6,454	12.6
Springfield	5,691	11.1
New Bedford	1,715	3.3
Cambridge	1,688	3.3

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$332,074.3	40,900
1971	331,595.2	38,300
1972	373,794.8	40,500
1973	442,851.8	45,900
1974	494,874.1	47,600
1975	569,732.2	48,900
1976	613,492.0	50,100
1977	671,198.7	51,300

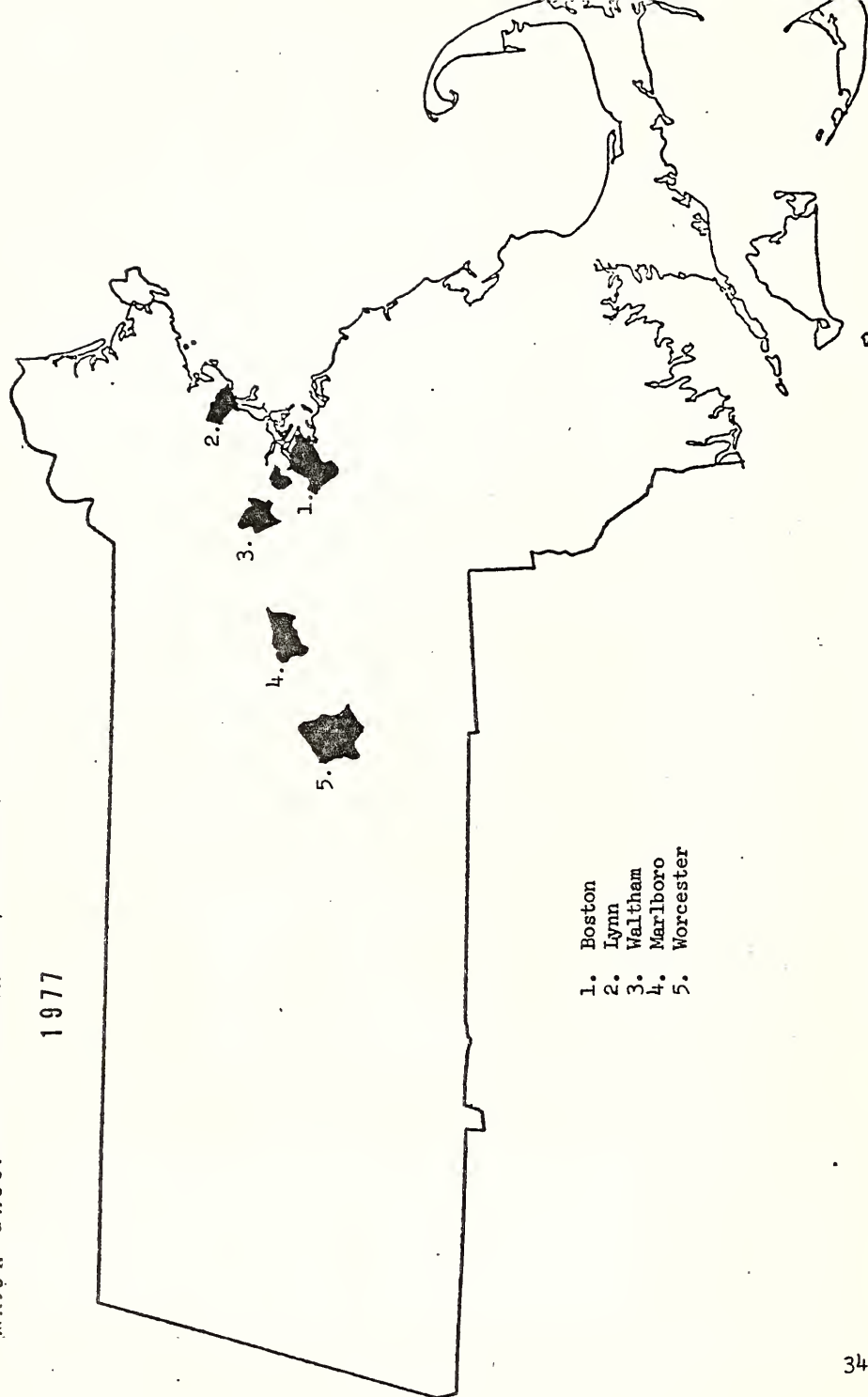
Industry Trends

Among the larger of the Commonwealth's industries, fabricated metal products includes establishments engaged in the fabrication of both ferrous and nonferrous metal products. This sector has run contra to general manufacturing industry trends, particularly during the 1974-1975 recession. From 1970 to 1977 approximately 10,400 jobs were added in this sector; and it flourished, apparently unscathed during the entire decade, posting yearly gains from 1971 on. The future of this industry will depend on many variables, among them the severe competition from imports and the continuing ready supply of copper and cobalt, much of which we must depend on foreign countries to supply.

CENTERS OF PRODUCTION

MAJOR GROUP 35 MACHINERY, EXCEPT ELECTRICAL

1977



MAJOR GROUP 35.-MACHINERY EXCEPT ELECTRICAL

The Major Group As A Whole

This major group includes establishments engaged in manufacturing machinery and equipment, other than electrical equipment (Major Group 36) and transportation equipment (Major Group 37). Machines powered by built-in or detached motors ordinarily are included in this major group; with the exception of electrical household appliances (Major Group 36). Portable tools both electric and pneumatic powered are included in this major group, but hand tools are classified in Major Group 34.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Worcester	5,294	6.3
Lynn	5,042	6.0
Boston	4,383	5.2
Waltham	3,024	3.6
Marlboro	2,655	3.2

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$687,884.3	73,800
1971	650,259.0	66,800
1972	691,280.3	66,600
1973	793,503.9	72,500
1974	936,062.1	80,300
1975	929,781.6	74,300
1976	1,014,380.7	75,000
1977	1,194,148.1	83,500

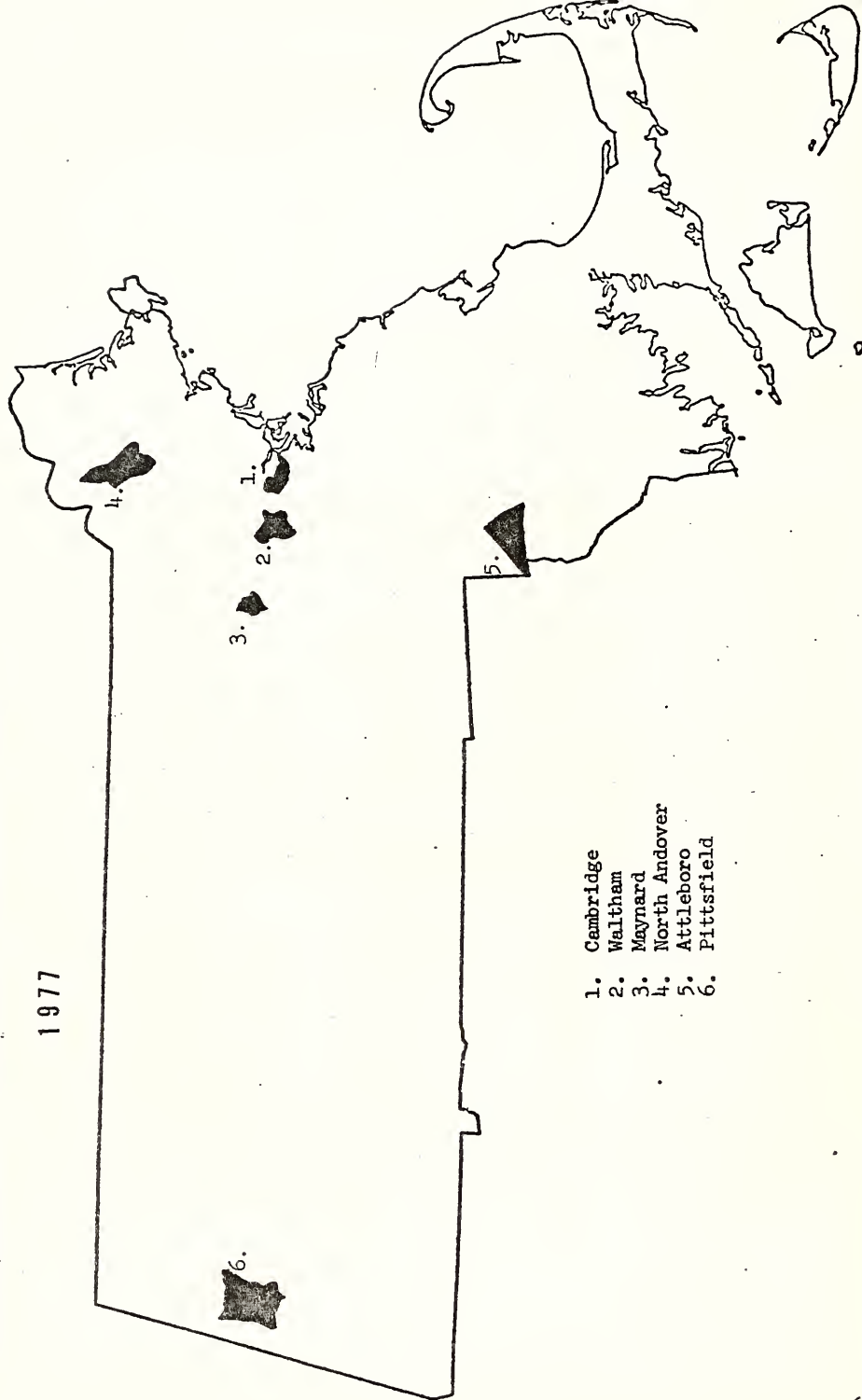
Industry Trends

This industry, which is the second largest in the state in terms of employment has shown an increase of 13.1 percent from 1970 to 1977. Although this industry evidenced healthy gains in 1974, it was affected by the recession in 1975, losing 6,000 positions. All of this loss has been recouped and further advances have been made since that time. It is anticipated that this industry will continue to expand, especially within the sector that produces computers, mini computers and computer peripheral equipment.

CENTERS OF PRODUCTION

MAJOR GROUP 36 ELECTRICAL AND ELECTRONIC MACHINERY

1977



MAJOR GROUP 36.-ELECTRICAL AND ELECTRONIC
MACHINERY, EQUIPMENT AND SUPPLIES

The Major Group As A Whole

This major group includes establishments engaged in manufacturing machinery, apparatus, and supplies for the generation, storage, transmission, transformation, and utilization of electrical energy. The manufacture of household appliances is included in this group, but industrial machinery and equipment powered by built-in or detachable electric motors is classified in Major Group 35. Establishments primarily engaged in manufacturing instruments for indicating, measuring, and recording electrical quantities are classified in Industry 3825.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Waltham	11,820	12.6
Maynard	7,946	8.5
Pittsfield	7,888	8.4
North Andover	6,405	6.8
Attleboro	5,996	6.4
Cambridge	3,100	3.3

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$797,726.9	93,600
1971	751,068.0	81,200
1972	814,746.2	84,200
1973	965,176.2	95,700
1974	1,079,192.0	101,500
1975	1,041,499.9	85,700
1976	1,120,451.9	88,700
1977	1,261,592.1	93,800

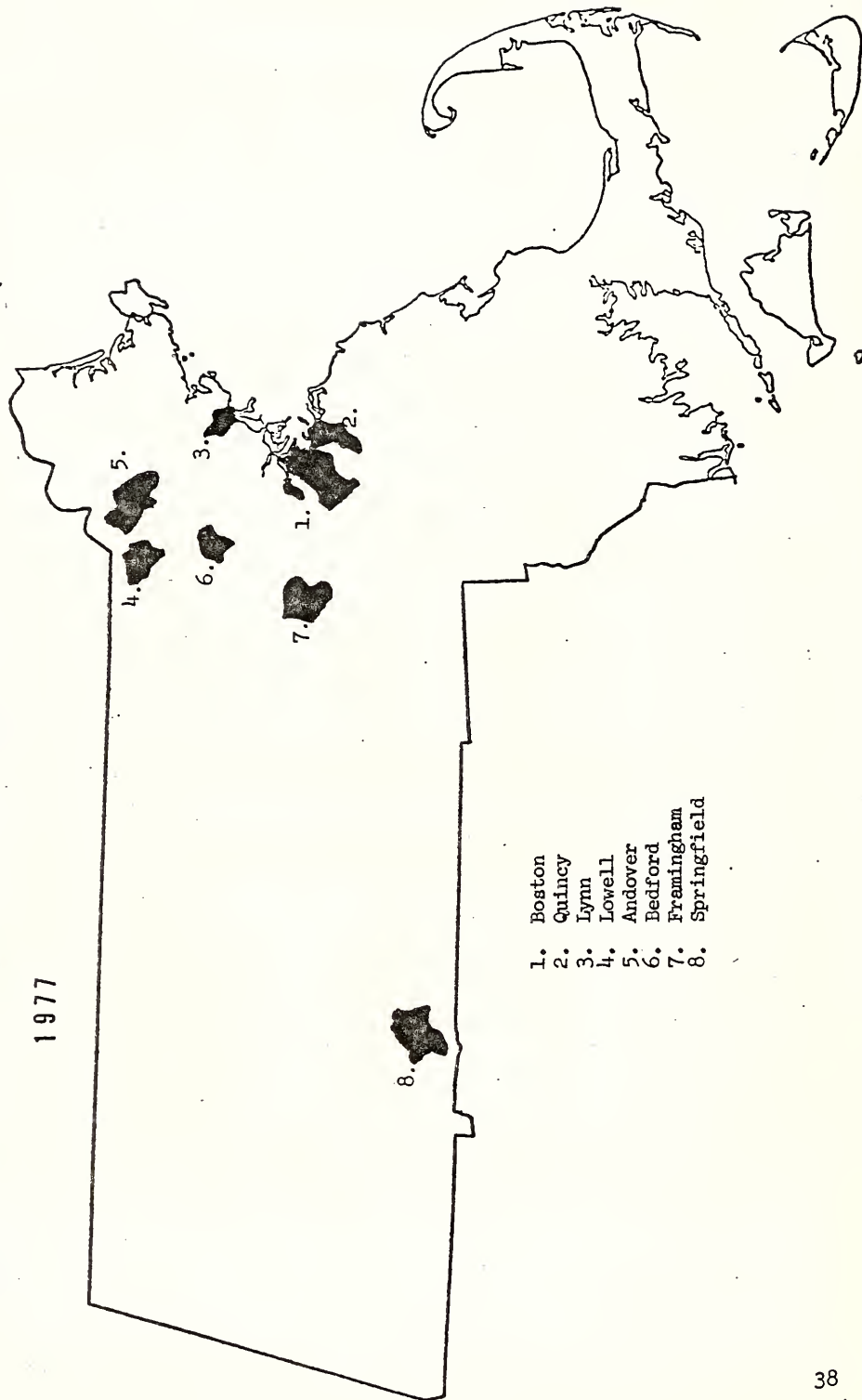
Industry Trends

This industry which is the largest of the manufacturing industries ended 1977 with an annual average employment level only 200 above the 1970 level. Peak employment levels were recorded during 1974, however this industry sustained severe losses during the 1975 recession, amounting to a decrease of 15,800 positions. During the next two years 8,100 of this loss was regained, but advances are still to be made in order to once again reach the 1974 employment level.

CENTERS OF PRODUCTION

MAJOR GROUP 37 TRANSPORTATION EQUIPMENT

1977



MAJOR GROUP 37.-TRANSPORTATION EQUIPMENT

The Major Group As A Whole

This major group includes establishments engaged in manufacturing equipment for transportation of passengers and cargo by land, air, and water. Important products produced by establishments classified in this major group include motor vehicles, aircraft, guided missiles and space vehicles, ships, boats, railroad equipment, and miscellaneous transportation equipment such as motorcycles, bicycles, and snowmobiles. Establishments primarily engaged in manufacturing mobile homes are classified in Industry 2451.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry, based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Lynn	6,111	18.5
Andover	5,514	16.7
Quincy	4,045	12.3
Bedford	4,034	12.2
Framingham	3,034	9.2
Lowell	2,096	6.3
Springfield	1,797	5.4
Boston	1,066	3.2

Average Annual Employment and Annual Payroll Statewide

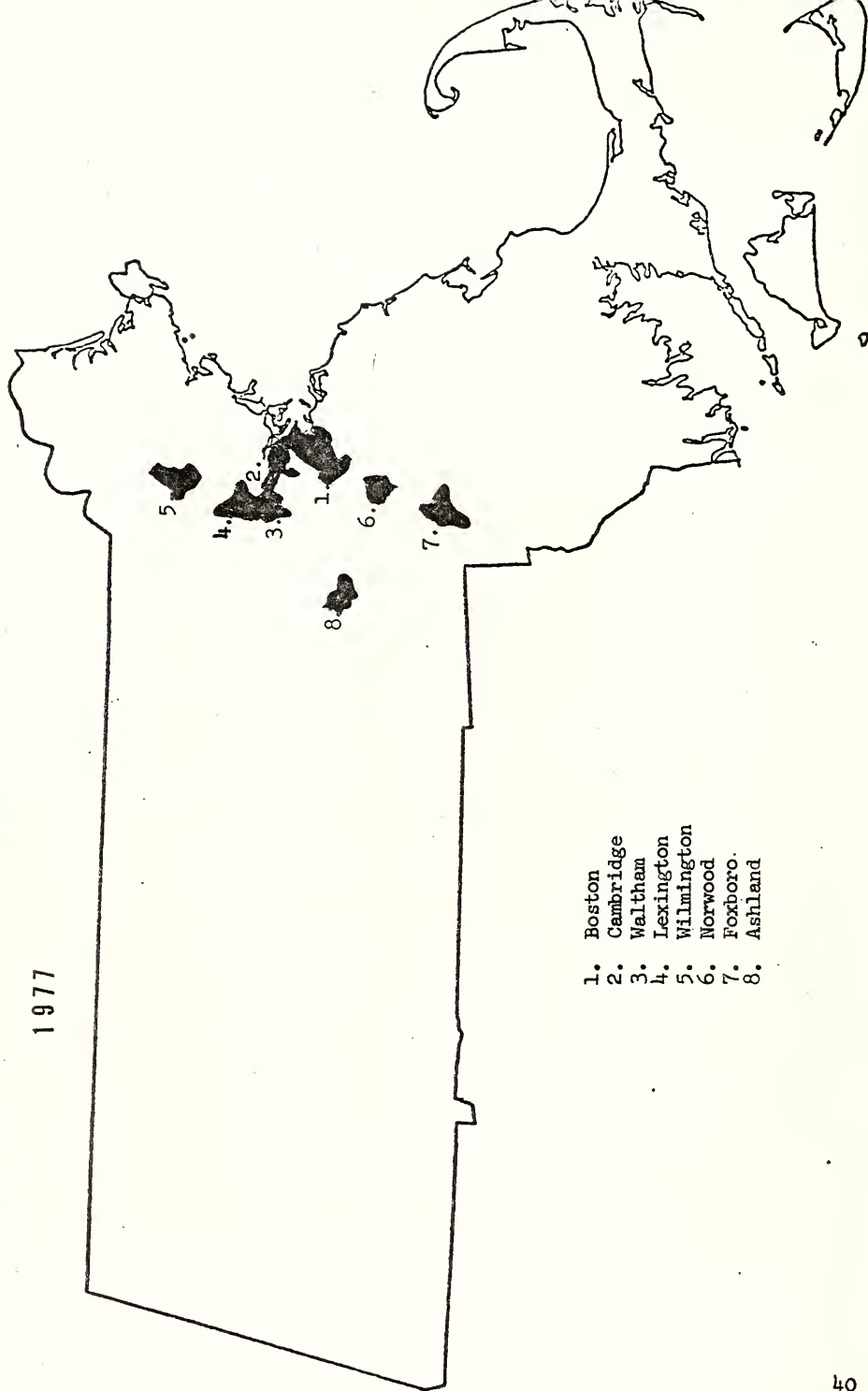
Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$241,683.6	25,600
1971	237,181.4	23,200
1972	222,258.3	21,500
1973	237,995.3	20,000
1974	223,217.2	17,600
1975	396,765.0	29,300
1976	451,339.1	30,400
1977	537,331.3	33,000

Industry Trends

After experiencing a period of decline in the early part of the seventies this industry has entered a period of expansion in Massachusetts. The 1977 annual average employment level for this industry showed an increase of 7,400 jobs or 28 percent over 1970 levels. Major segments of this industry include the manufacture of aircraft engines, shipbuilding and the manufacture of motor vehicles and related parts.

CENTERS OF PRODUCTION
MAJOR GROUP 38 INSTRUMENTS

1977



MAJOR GROUP 38.-MEASURING, ANALYZING AND CONTROLLING INSTRUMENTS;
PHOTOGRAPHIC, MEDICAL AND OPTICAL GOODS; WATCHES AND CLOCKS

The Major Group As A Whole

This major group includes establishments engaged in manufacturing instruments (including professional and scientific) for measuring, testing, analyzing, and controlling, and their associated sensors and accessories; optical instruments and lenses; surveying and drafting instruments; surgical, medical, and dental instruments, equipment, and supplies; ophthalmic goods; photographic equipment and supplies; and watches and clocks.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry, based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Waltham	6,093	12.1
Cambridge	5,042	10.0
Foxboro	4,773	9.4
Norwood	3,750	7.4
Lexington	2,184	4.3
Ashland	1,812	3.6
Boston	1,704	3.4
Wilmington	1,697	3.4

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$299,862.1	32,300
1971	305,899.7	31,000
1972	337,205.2	32,400
1973	397,462.5	35,700
1974	481,970.5	41,000
1975	560,284.1	44,000
1976	621,481.8	44,700
1977	751,850.6	50,500

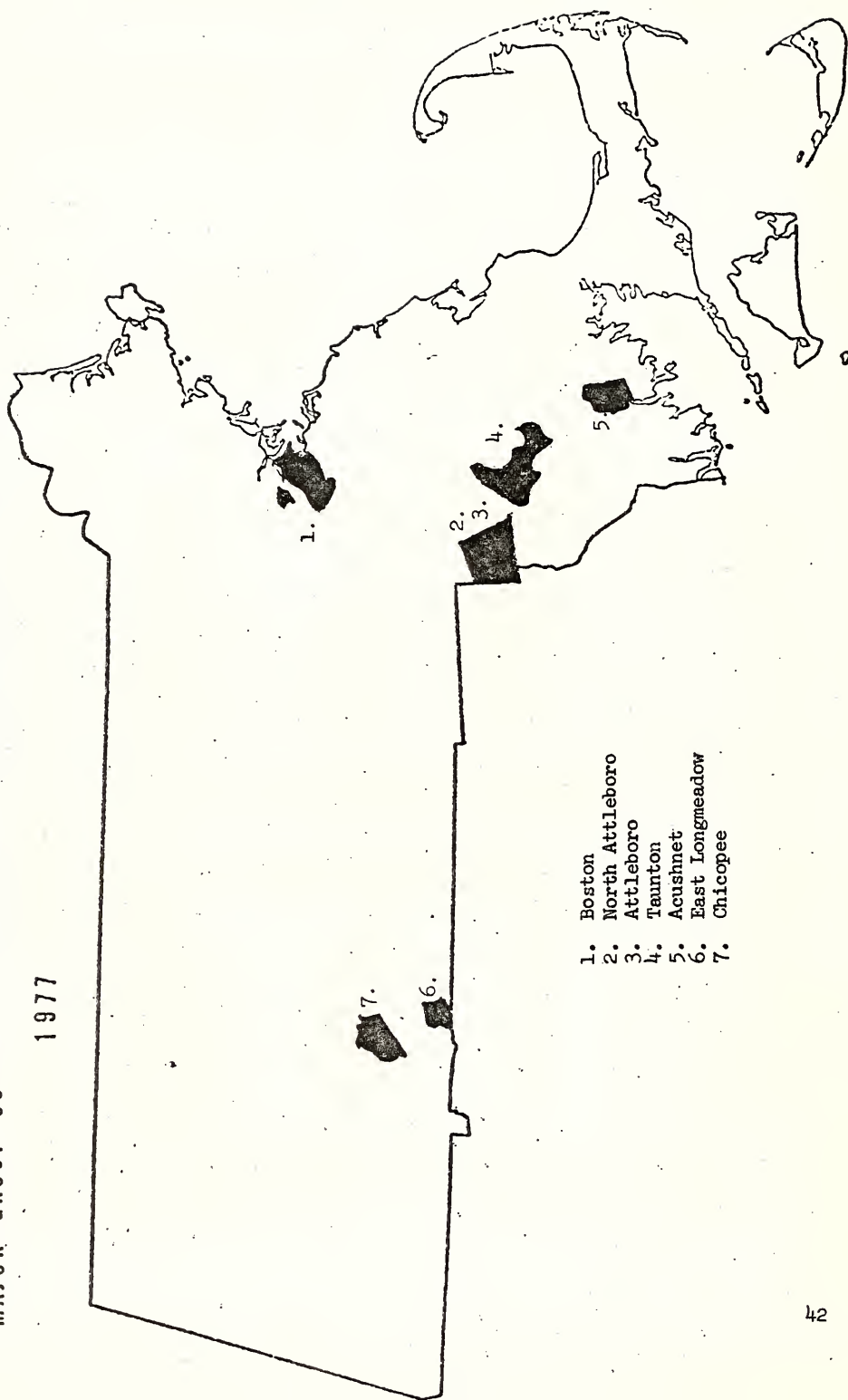
Industry Trends

Employment in this industry has been growing steadily since 1970, with a 1977 annual average employment level 56 percent greater than the 1970 level. This industry is the fastest growing manufacturing group in the state, and was one of the few which went through the 1975 recession without losses.

CENTERS OF PRODUCTION

MAJOR GROUP 39 MISCELLANEOUS MANUFACTURING INDUSTRIES

1977



The Major Group As A Whole

This major group includes establishments primarily engaged in manufacturing products not classified in any other manufacturing group. Industries in this group fall into the following categories: jewelry, silverware and plated ware; musical instruments; toys, sporting and athletic goods; pens, pencils, and other office and artists' materials; buttons, costume novelties, miscellaneous notions, brooms and brushes; caskets, and other miscellaneous manufacturing industries.

Locations With Significant Employment

The cities and towns listed below had at least 3 percent of total statewide employment in this industry based on 1977 annual average employment levels.

Location	Employment	Percent of Statewide Total
Attleboro	5,380	21.1
Taunton	2,318	9.1
Chicopee	1,970	7.7
East Longmeadow	1,706	6.7
Boston	1,450	5.7
No. Attleboro	1,331	5.2
Acushnet	974	3.8

Average Annual Employment and Annual Payroll
Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$184,880.6	27,500
1971	185,274.7	26,800
1972	208,434.1	28,100
1973	208,647.7	27,000
1974	220,051.7	27,000
1975	212,560.0	24,000
1976	236,884.9	24,500
1977	259,796.7	25,500

Industry Trends

Employment within this industry has been fairly stable since the late 1950s. Job gains and losses have for the most part resulted from cyclical behavior in the national economy. Job losses during the 1974-1975 recession accounted for 11 percent of total employment. Since that time 1,500 jobs have been recouped but employment levels are still below pre-recessionary highs.

A P P E N D I X

The Standard Industrial Classification System (SIC) was developed in 1938 by an Interagency Technical Committee for use in the classification of establishments by type of activity in which engaged; for purposes of facilitating the collection, tabulation, presentation, analysis of data relating to establishments; and for promotion uniformity and comparability in the presentation of statistical data collected by various agencies of the United States Government, State agencies, trade associations and private research organizations.

Since its development the SIC has undergone four major revisions, which were necessary in order for the classification system to reflect the changes that occur within the industrial composition of the American economy and to include emerging industries.

The most recent revisions occurred with a change from the 1967 edition of the Standard Industrial Classification to the 1972 edition. Within the manufacturing sector, with which this publication is concerned, the major result of this revision was the elimination of Major Group 19. Establishments previously included in that category have been assigned to Major Groups 34, 36, 37 and 38. The effects of this change are reflected in employment and wage data beginning with the year 1975.

MAJOR GROUP 19.-ORDNANCE

The Major Group As A Whole

This major group includes establishments engaged in manufacturing artillery, small arms and related equipment; ammunition; tanks and specialized tank parts; sighting and fire control equipment; and miscellaneous ordnance and accessories, not elsewhere classified.

Average Annual Employment and Annual Payroll Statewide

Year	Annual Payroll (in 000's)	Average Annual Employment
1970	\$194,551.6	20,100
1971	175,912.0	16,700
1972	183,141.5	15,900
1973	190,594.4	15,600
1974	222,934.4	18,000

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AUTHOR

Industrial profile of manu-

facturing industries in
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